THE OIL WEEKLY

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APR. 7	Society of Exploration Geophysicists, Texas Hotel, Fort Worth, Texas.
7- 9	American Association of Petroleum Geologists, Texas Hotel, Fort Worth, Texas.
8- 9	American Petroleum Institute, Division of Production, Eastern District, Wm. Penn Hotel, Pittsburgh.
MAY 5- 6	Petroleum Electrical Association, Houston.
20-21	A.P.I. Mid-Continent Section, Production Division, Tulsa.

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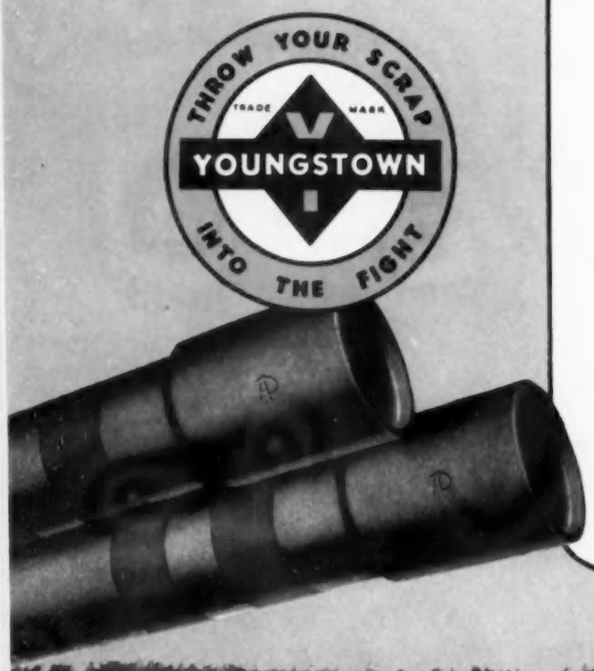

FROM these reserves, two extra pounds of ore must be used for each pound of scrap you fail to turn in.

Vast as they are, America's precious iron deposits are not limitless. Considering the terrific drain on them now for those extra pounds to win the war, experts say our high-grade Lake Superior district reserves will be exhausted in a few more years . . . by 1950 . . . or sooner.

So the steel industry needs every pound of scrap you can muster . . . today, next week, next month, every month. Scrap is vital for Victory over the Axis . . . and vital also, to conserve the natural resources we shall need for reconstruction after Victory.

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The Changing Panorama

All Factors Indicate Texas End of Second Line Should Be Built

APPARENTLY the approved plan to construct a new 20-inch product pipe line from the Houston-Beaumont refining area to Seymour, Indiana, is fast becoming a political football. Midwest congressmen and pressure groups apparently fear that the line would injure the oil industry in their territory, and are insisting that the carrier should be built from Illinois or Indiana to the East Coast instead of from Texas to Illinois.

Failure to construct the line from Texas northeastward would be poor judgment and unwise from a "win-the-war" viewpoint. Midwest production and refining output is not sufficient to supply all their own needs, let alone furnish additional supplies for the East Coast, and is constantly declining in producing ability. The Midwest groups no doubt believe that the Gulf Coast refiners ultimately would take away more of the Eastern market, whereas all indications point to the inability of the Midwest to furnish oil to the region.

If the suggestion that the line be built from Illinois to the East instead of from Texas to Indiana be adopted, it would be necessary to depend upon tank cars to furnish a supply for the line. This would require the transfer of tank cars now operating in the East to the Southwest, and might throw such a burden on the few railroads in this territory as to make it impossible to carry enough oil to operate the system at full capacity. If the line is built from Texas to Indiana, no additional burden will be thrown upon the railroads. Before the line is finished, the 24-inch system now under construction will be completed. This will relieve many tank cars, which can continue to operate over almost the same roads they have been. It would also be necessary to build adequate tank-car-loading terminals in the Southwest, whereas sufficient capacity already has been provided in the East.

Furthermore, every help possible must be given Gulf Coast refineries, which are producing more than 50 percent of all the critical war petroleum products for military forces. Failure to give assistance to them might well seriously cripple the output of aviation gasoline, toluene, lubricants and other war products. Refineries in Oklahoma, Kansas, Illinois and Indiana are producing less than one third as much critical products as Gulf Coast refineries.

Considering the hurried and essential expediencies of war, any proposal to build the line over another route or to build the line from the East Coast westward endangers the entire project and also the war effort of the industry.

Bill Would Hike Texas Oil Taxes

A BILL that would add at least $20,000,000 additional tax burden to the petroleum industry in Texas, has recently been introduced by Representative Roger Q. Evans, of Denison.

The bill seeks to levy an additional 2 cents per barrel to the present tax of 12 cents per barrel on crude oil. Also there is included the provision for extra taxes of a quarter cent per gallon on condensate, drip gas and natural gasoline.

Already the oil industry of Texas is responsible for approximately two fifths of the total tax bill of Texas. The industry is being called upon in large measure to meet the extremities of war at whatever cost. With the restricted possibilities of increasing production through further exploration, price ceilings, and the shortage of available materials with which to expand production, any measure that imposes further taxes at this time is one more handicap that should be discouraged.

Government Does Not Plan To Wildcat

A FEW weeks ago we reported in these columns that there was a rumor that the government was planning to do some drilling on its own hook and said we did not believe it. The way the report came to us indicated that PAW had in mind doing some wildcat drilling. We are glad to lay that rumor at rest. Neither PAW nor any other governmental agency at this time contemplates getting out with a wildcat rig to show American operators what can be done. Some day we will give the lowdown on what started the rumor.

Some Observations on Prospects for Early Crude Price Increase

IN ALMOST every corridor, office and gathering of oil men, the subject of conversation, after the war has been discussed, is what will happen in the way of a crude-oil price increase.

After some visiting in Washington, and other points, we have some observations on what may happen which, although not offered as being authoritative, may at least have some bearing on the subject.

We believe that there will be a general price increase within the next 60 to 90 days, but that the increase will not come as a flat over-all increase of 25 cents or any other amount per barrel for the entire country. We believe that when the increase comes, if it does, it will vary in districts and fields. We believe that it will result in readjustments in various areas, curing what many consider to be inequities in prices in various fields. We think that it may be as much as 25 cents per barrel (possibly more) in some areas, and that in others it will be considerably less.

Things to Remember

One thing to be remembered in all this discussion on crude price is that Petroleum Administrator Ickes is charged with the duty of recommending crude-oil-price changes to the Office of Price Administration. He has made three such recommendations, each a rather localized thing, and one of these has been granted, the other two hanging fire. He has not made any formal blanket recommendation for a flat price increase although he has on more than one occasion indicated publicly that a price increase probably is justified. We have the feeling that before he does make such a recommendation he wants to be sure that he is not out on a limb.

There is a genuine, and well founded, hesitancy on the part of all about puncturing the price ceiling unless such punctures are absolutely necessary to the war effort.

Ickes is the kind of a man who fights for something, once he has determined on the course, and we have an idea that he wants to be sure of what he is fighting for.

To begin with, the situation is fraught with considerable political dynamite.

The public generally has labored under the impression for many years that the oil business is a business of great profits and PAW has to contend with the disposition on the part of many to feel that if the oil industry has made a lot of profits in the past, it might well live off of its fat for a while.

Of course if it is shown that the idea of heavy profits for the industry generally is erroneous, and that the industry which has on its shoulders the job of producing war's most essential product, oil, is in such shape as to require a price increase to carry on that burden, chances for a price increase are good.

Criticism and Cross-Criticism

As we have talked with different people in different places, we somehow get the idea that the IPA brief on prices did not satisfy those charged with defending the absolute necessity of a price increase. We may say that that is putting it mildly. We feel, too, that the disposition of some independents, to criticize as "pinks" some of the PAW officials, has contributed little to the chances of getting an early price increase. On the other hand, the feeling, expressed in some independent circles, that the major companies are opposed to a price increase, is without foundation, at least in the great majority of places, and we are not sure about the others. We do know that many of the big companies distinctly favor a price increase and are working diligently to bring it about, but at the same time they realize that a crude-price increase without consequent increases in refined prices, would only complete the very real debacle some are facing.

Some Tangible Evidence

It so happens that there is some very tangible evidence, as we see it, to support the statement that the oil industry is not an industry of inordinate profits. The Independent Monthly carried, in its current issue, some very interesting data, taken from income tax records, which show that producers on the whole have fared rather illy during the past several years. John D. Gill and his PIWC committee have also made some real contributions along this line through a study of the rates of return over a period of years of 24 oil companies as compared with the rates of return of 400 industrials. (The Oil Weekly, August 17, 1942, pages 14-16, touched on this same subject.) Gill's report may have real weight.

At this moment studies are under way at PAW to determine just what has happened to the costs of drilling, and the costs of production. In the interest of time, these studies are not industry-wide, but we believe, from what we have heard of them, that the disposition of PAW to get facts of an average nature, is above suspicion. These studies are such as will not require too much time.

Of course after the recommendations are made to OPA, and we think that they will be made, there still remains the very sizeable job of convincing OPA that a price increase is necessary to the war effort.

Some Advice

In the meantime we should like to offer a word of advice:

PAW is looking for figures, rather than words or phrases. PAW is cognizant of a situation where too low a price will cost the reserves represented by many stripper wells. PAW wants more exploratory drilling. PAW has not sold out to anybody. Nothing as yet has happened—actually happened—which need result in recriminations. One of the curses of the industry has been internal jealousies and suspicions, leading to a disposition of one element or another to "take it out" on an opposing element. We can well attempt to strive for greater unity than we have had. Let's do not "suspect" a man just because he does not act as rapidly as we might want. If we finally are pretty sure that he is a nigger in the woodpile, go after him, but hold the bricks until we can be "pretty sure."

And finally, that there may be no misunderstanding of any kind about what The Oil Weekly thinks, let us say that we are already of the firm belief that a price increase must be had if the industry is to do the job it has ahead of it; that this increase must come not simply to stimulate exploratory drilling (which we believe it will do) but to keep the wells already drilled operating at the rates which will be necessary during the next 12 months, and that this increase should come as soon as possible. It is already long overdue.

This Will Provide a Rough Idea

"There is nothing in the reports of the earnings of oil producers as we have them, and nothing in the cost studies as they have come to us to date to warrant a general increase in the price of crude . . . " — from statement of Leon Henderson before O'Mahoney Committee on October 9, 1942.

There is a source apparently not considered by Mr. Henderson. It is the income tax department of the U. S. Treasury. The report for 1940, latest available analysis, shows that 3,022 producing companies had NO NET INCOME that year; 1,922 did have. Those who were without net income had receipts of $292,345,000. The price of oil that year was a little more than a dollar a barrel, U. S. average, so barrels and dollar receipts of the net incomeless group were about equal; thus, approximately a fifth of the total production of the nation came from a group that sustained a deficit, according to Treasury report, of $61,169,000.

—From *Independent Monthly*.

Oil Firms Urged to Close Rubber Drive

Closing of government storage locations for scrap rubber, on March 10, will bring to a formal close, the drive started last summer by the petroleum industry.

All oil companies having rubber collected from the drive are urged by William R. Boyd, Jr., chairman of the Petroleum Industry War Council, to ship such rubber now. Boyd asks that all participants in the drive make a supreme effort to complete all bookkeeping at once, and to send final statements and checks to the council for deposit in its Rubber Drive Trust Fund, so that distribution of the excess money to the four national service organizations can be made without delay.

"Reports of the Rubber Reserve Company indicate that practically every pound collected has now been shipped, and they are accordingly going to close their stock piles to these shipments. More than $500,000 has already been received by the council from 726 companies," Boyd said. Most of these have been small companies, so over a million dollars more is anticipated, and every large and small oil company engaged in the drive is urged to prepare a final statement. This money will be distributed to the American Red Cross, the USO, and the Army-Navy Relief Funds.

Japs Getting Oil From East Indies

Apparent failure to put the oil fields of British Malaya and the Dutch East Indies entirely out of commission, or that the Japanese have shown better resourcefulness than anticipated, was noted last week in a statement by Secretary of the Navy Knox that the Japanese are getting some oil from the conquered territories. To this the secretary added that American submarines were pressing a campaign against Nippon supply lines.

Soft Coal Production Reaches 14 Year Peak

EMPHASIZING the reflected demands for soft coal as a result of industrial activity and also to replace fuel oil for heating and power throughout the East, production of the Eastern mines has reached the highest total for 14 years. The total output was estimated at 12,200,000 tons for the week ending February 13, the largest amount since the week of February 9, 1929, at which time the peak was 12,292,000 tons.

In announcing the record output, Harold L. Ickes, Solid Fuels Coordinator for War, stated that if the daily average reached for the week of February 13 can be maintained for all the remaining work days in 1943, coal requirements can be met. To maintain the average, both mine manpower and orders for soft coal must be kept at current levels, the coordinator pointed out. This will entail purchases of coal for future use during the warmer months when orders for coal normally are lighter than in the usually heavy production months of January and February.

Oil from Big-Inch Arriving in East

LAST week the Atlantic Seaboard area began to feel the influence of the big-inch pipe line for the first time, as the first tank car trains commenced moving oil from Norris City, Illinois, on February 19 for delivery to Eastern refineries. This was just 200 days from the date of actual beginning of work on the 500-mile 24-inch line.

Tank cars operating in ODT-directed solid trains will move approximately 50,000 barrels a day from Norris City during the first 10 days of operation. Loading at that point will increase to an eventual 250,000 barrels a day, and an additional 50,000 barrels will flow through connecting lines to other terminals in Illinois for transshipment to the East. The total movement of petroleum and petroleum products to the East is expected to be boosted some 120,000 barrels daily as the result of the shortening of train hauls. Meanwhile, work continues at a rapid pace on the extension of the line to New York and Philadelphia refining centers.

The first batch of oil moved through the line was crude from the East Texas field. Subsequent movements will alternate loads of crude and fuel oil.

Loading facilities at Norris City capable of handling approximately 1160 tank cars every day are being rushed to completion. They will include 3 loading racks, capable of handling 254 cars at a time, and 16 single-car outlets. Storage tanks, which will hold 1,280,000 barrels, are expected to be completed at Norris City by May 1.

Rural Driving Cut Nearly One Half

THE first month of gasoline rationing reduced traffic on rural roads 48 percent, according to the Public Roads Administration of Federal Works Agency. The figures, which cover December, apply to the newly rationed areas of the country, and not to the East Coast. The decrease in newly-rationed areas compares with declines of about 23 percent over previous months.

This sharp decline may have been due in part to a psychological reaction on the part of motorists subjected for the first time to rationing, the administration noted. The same excessive reaction during the first few weeks of rationing occurred in the East, it was pointed out. During the last two weeks of May, 1942, the decline throughout the Eastern area was 45 percent. In June, however, motorists apparently had accustomed themselves to their allotment of gasoline and the decline was only 38 percent.

Army Using Synthetic Gaskets in Fuel Lines

SYNTHETIC rubber gaskets of sufficient flexibility to overcome the difficulties of rough, uneven terrain are being used by the United States Army Corps of Engineers. The use of such gaskets is helping to insure uninterrupted supplies of fuel and water for mobile units of the nation's fighting forces.

This synthetic rubber, a Buna type, is finding a ready use as sealing gaskets within pipe couplings and insures quick, leak-proof connections between the 20-foot lengths of pipe which comprise the line. It is said that this type of rubber is particularly adapted to fuel lines because of its resistance to aromatic, high-test gasoline used for airplanes and armored vehicles.

According to the information released, the resistance to swell from fuels for this material is measured at 20 percent as compared with 240 percent for natural rubber.

Drilling contractors who are paying a special travel expense or travel allowance to crewmen, may be required to regard such extra compensation as "wages," according to a revised opinion of the Dallas office of the Department of Labor.

—International News Photo

The first crude delivered to Norris City, Illinois, through the "big inch" line is ready to start via tank car on its second lap which will deliver it to Eastern refineries. This was February 19. Crowd is part of that which attended dedication ceremonies.

United States Cannot Depend on To Find Urgently Needed New

By L. J. LOGAN, Associate Editor

AGAINST the somber background of fresh, heavy losses of ships and American lives, President Roosevelt in a Washington birthday address warned against undue optimism over Russian military successes and cautioned the nation to remember that it still was at war and that it could not count on miracles to achieve victory.

So important is this warning as applied to matters affecting oil that it deserves to be re-sounded in the ears of all administrative officials of the government who exert influence on oil affairs, and it needs to be put before their eyes in writing in the sky.

More and more insistently it is being said that the United States is headed into a possible shortage of oil, which could become extremely serious before the end of the war, delaying victory and costing heavily in human life.

More and more clearly it becomes evident that there are real grounds for anxiety regarding the nation's ability to produce and physically handle all the oil that will be needed in the early future.

Consumption to Increase

War already has brought increased consumption of petroleum products, and everyone should realize more intensive fighting is due to come, which will bring further enlarged requirements for oil products. The Petroleum Industry War Council several weeks ago predicted that consumption in the last quarter of 1943 would be 400,000 barrels per day higher than at the start of the year. Since that time developments indicate requirements may be even greater.

If the program for a European invasion and more intensive Asiatic military operations is to be successful, a definite assurance of a sustained and adequate producing ability is essential. If these operations use "petroleum products in proportion to the rate which they are now being used in North Africa . . . very grave doubts will arise as to whether this country, from its domestic source of petroleum production, will be able to meet requirements," warned PAW's Assistant Deputy Administrator Robert E. Allen last week. There is every reason to believe that the rate of petroleum consumption during these operations will be at least proportionate with that of the North Africa campaign.

Producing Ability Declining

Meanwhile, reduced drilling and finding of less prolific new producing sources has lowered the nation's ability to produce crude. At present the United States probably cannot enlarge its producing rate but 300,000 to 400,000 barrels per day, all of which is in Texas, where utilization is handicapped by lack of transportation outlets that prevent moving it to consuming points.

Within the industry, there is now full and sufficient realization that the nation is treading on thin ice with regard to maintaining its ability to produce enough oil, which is as essential, if not more so, than airplanes, tanks and ships, for winning this war of machines and great distances.

Fortunately, there is also a fairly general comprehension of the measures that are needed to assure continued unfailing supply of oil. Men of the industry, in cooperation with some of the government agencies exerting influence on oil operations, have analyzed the industry's responsibilities and have conceived what they believe to be the most effective practical solutions of the problems involved; although several other governmental administrative agencies, particularly OPA, have either failed to grasp the grave implications of a threatened shortage of oil or else have failed to put first things first in carrying out the war-time duties delegated to them by the people through Congress and the President. (Keeping price ceilings intact admittedly may be a very important objective, but who will support it as overshadowing in importance the maintenance of a steady and adequate supply of oil for fighting the war?)

As just stated, it is fortunate that there is, despite OPA and some other agencies and groups, not only recognition of the oil shortage threat but also much constructive and farsighted thinking and planning as to how it can be averted or minimized.

Furthermore, the thinking and planning are backed up by action. Some things are being done to avoid serious shortage. It is not only recognized that wildcatting needs to be materially stimulated, but some moves are being made in the hope of getting needed new oil fields.

Nevertheless, not enough is being done. The need for increased wildcatting is crystal clear, and goals have been set up for operators to try to reach in exploratory work, while individual companies are being contacted by PAW with the view toward securing the drilling of the more promising prospects.

Wildcat Results Disappointing

But wildcatting was greatly disappointing in 1942, first year of the war for the United States, and it has been similarly disappointing in the first two months of this second year of the war. It is to be hoped that coming months will bring better fulfillment of the exploratory program deemed essential. But there also were hopes that the 1942 wildcatting program would be fulfilled, which it was not, to the substantial impairment of the nation's oil producing ability during 1942. Clearly, something fundamental is lacking in the approach toward getting done what needs to be done, and the impediments must be removed.

With demand for petroleum expected to be in 1943 from 5 to 7 percent greater than the actual demand of 1942, and with demand in any subsequent years of war similarly certain to be very great, the nation cannot afford to operate on the basis of hopes that may or may not be fulfilled. Wars are not won merely on hopes, and when the writing on the wall says that at least 4500 wildcat wells need to be drilled in 1943, it is time for action which will assure that number of wildcats actually on the records of drilling for the year—even if that action involves in fairness

Miracles Fields

DEFINITE assurance of adequate oil producing ability to fulfill consumptive needs is essential to successful European invasion and more intensive fighting in the Pacific, but the United States is not finding enough oil to satisfy the increased requirements of such military plans. Warning that nation cannot depend on miracles to achieve victory applies particularly to the problem of finding new oil fields, yet not enough is being done to stimulate venture drilling and oil field discoveries — without which victory may be delayed and many human lives sacrificed.

and justice a general revision of crude oil prices and furthermore a revision of the allocations of steel and other materials for drilling and special dispensations with regard to manpower.

Running Risk

The nation cannot depend on miracles to get the new oil fields which clearly are needed for the successful prosecution of the war.

It cannot run the risk of a repetition of results in 1942, when wildcatting goals were set up but not reached by an important margin, and when only 400 to 800 million barrels of new oil were found.

Somehow, there must be assured the drilling of whatever number of wildcats are needed to give the nation the oil-producing ability necessary to fight the war; and the time is past for too much controversy and debate over how the necessary results are to be achieved.

Especially does it appear that the time is largely passed when the nation can afford to weigh the theoretical benefits of rigid oil price ceilings against the practical oil finding results which higher crude prices traditionally have brought, throughout the history of the industry.

Industry Sought in Vain

For a year, men with deep insight into the economics of the oil industry have sought in vain to convince OPA of the danger of forcing the industry to try to maintain aggressive exploratory work under price ceilings that made development futile or in the case of weaker companies practically impossible.

Finally, the long denial of what would be accepted as adequate prices has led to discouragement which no longer is successfully concealed, despite the fact that men of the industry almost unanimously have tried hard to take the "good soldier" spirit and attitude.

And now when the spectre of oil shortage looms larger and closer before the nation, and when the industry is urged to find more oil, these men who have devoted their lives to building up the industry and who understand its intricate workings begin to cry out, almost in desperation: "The industry understands full well a threatened shortage of oil. It has faced threatened shortages before. And in the past it always has done something about such threats. Prices of crude were increased by the refiners needing assured supplies, new oil fields were found, and shortage was averted. But now the one true and tried means of getting new oil is not invoked."

This is the feeling of practically the whole industry: that more equitable prices would go a long way toward averting the oil shortage threat which monthly becomes more and more menacing.

If there is a single miracle which *can* be depended upon to bolster or increase the nation's oil producing ability it is the one which would be witnessed in the wake of an upward adjustment of oil prices.

Urgent Need for New Fields

One of the most significant statements given out from high places since Pearl Harbor was the recent declaration of E. DeGolyer, assistant deputy petroleum administrator, that the nation faces a "stern need to increase daily (oil) productive capacity." (THE OIL WEEKLY, Feb. 22, 1943, page 40.)

It was overall a very serious, if not gloomy, picture that DeGolyer painted. And his statements deserve the careful consideration of the President of the United States as well as that of key officials in all the government agencies having voice in the war-time operation of the oil industry. An eminent geologist and geophysicist and a practical and successful oil explorer and producer, who has turned his knowledge and experience into helping solve the nation's oil problems during the war, DeGolyer has been seriously concerned for several years over increasing difficulty in finding new oil fields, and now that the nation is confronted with extraordinary demand for oil, following several years of disappointing results in wildcatting, he reveals views on the matter which border on the pessimistic.

"We are not finding oil fast enough," he declared in presenting a paper February 18 at New York before the American Institute of Mining and Metallurgical Engineers, "and we have not found oil fast enough for the past four years to replace that which we have produced and consumed and so to maintain our reserves on balance."

The nation is not concerned now with this decline of discoveries as regards effect on the reserve position, he said, but we are moved by the stern need to increase daily productive capacity; and discovery of new pools is the quickest and most effective method of achieving needed results at minimum expenditure of manpower and scarce, critical materials.

Shortage Near at Hand

We still have some excess capacity to produce, the assistant deputy petroleum administrator conceded; but it is largely in West Texas, New Mexico, the Gulf Coast, and Southwest Texas, and part of it is not presently accessible because of transportation restrictions, and furthermore, the peak war demand for oil has not yet been reached. While transportation problems will have to be solved, even the utilization of full productive capacity will not be enough, and we will need more oil than we are able to produce. Shortages in productive capacity will be faced in the very near future, including one in California perhaps by the third or fourth quarter of this year.

So serious is the threat of impending shortage that PAW in its reckonings has changed the standards of value for reserves to terms of immediately producible capacity instead of ultimately producible barrels of oil. Similarly, the standard of value for conservation has changed to merely one of good production practice instead of conserving oil for 20 or 30 years hence.

"We are moved by the stern need to

keep our daily productive capacity at the highest possible rate for the next two, three, and four years," declared DeGolyer. "The war need is paramount, and it requires, we hope, the relatively short view."

Not only are new oil fields urgently needed, it is indicated by statistics offered by the PAW representative, but for any gain in producing ability as well as reserves, it requires more wildcatting now than formerly, inasmuch as individual discoveries have been diminishing in importance, on the average, for several years. In other words, it has become increasingly difficult to find first-rate fields, and apparently, much more wildcatting than in the past will be needed to maintain producing ability.

Over 3000 wildcats have been drilled annually in each of the past 3 years, according to DeGolyer, a number greater than for any other time for which records are available. Over 300 geophysical and core drill crews operated last year and still are at work—more than 12 percent over such prospecting of any previous year. Yet results have fallen below hopes and necessities.

In the AIME paper, DeGolyer embodied a table, presented herewith, which indicated: (1) a sharp falling off in reserves discovered annually since 1938, (2) an increase annually in number of fields discovered, but (3) decreasing average reserves discovered per field.

Consumption Very Great

The nation's real problem, in his opinion, is that of the tremendous rate of consumption of petroleum which has evolved. Nothing in past exploration history justifies belief that we can continue to discover indefinitely the almost 1½ billion barrels of oil that we consume annually, he declared.

Except in the "geophysical period," 1926-1938, DeGolyer said, when a new and highly effective prospecting tool was available for making an exceptional number of important discoveries, there were only two years in the whole history of the oil industry when we discovered as much as 1 billion barrels in a single year, namely, 1901, the year of Spindletop and other early Gulf Coast fields, and 1921, when Long Beach, California, was found.

Continuous decrease in the average size of fields discovered suggests to DeGolyer that we may be approaching the end of an era—that of prospecting for oil in structural traps—as well as the end of a period—that of the search for such traps by geophysical methods.

Because of the war, nevertheless, we now require increased productive capacity, and the best chance of getting it is through discovery of new fields, he declared; and if new fields cannot be found at the present rate of exploration, efforts must be increased. Accordingly, PAW has recommended the drilling of 4500 wildcats during 1943, as compared with the 3045 actually drilled in 1942.

Individual companies are being approached and asked to discuss their prospects and their proposed exploratory programs, and PAW intends to put forth all efforts within its power to step up the rate of oil finding.

"The war has placed only one requirement on those engaged in petroleum exploration and development," declared the spokesman for PAW, "—to find more and more oil—of the right type and in available places—with less and less equipment. It is a problem which is complex. Yet the problem must be solved."

In the conclusion of his discussion of the need for new fields, DeGolyer threw a ray of hope into the otherwise foreboding prospect by saying that he believed there were yet unknown fields of great magnitude still to be discovered in the United States. He referred especially to search for fields of the stratigraphic trap type, to which the mammoth East Texas field and the great Coalinga Deep fields belong.

Question Estimate Method

Following DeGolyer's presentation of the above discussed paper, some question was raised as to the method used in showing the trend of reserve discoveries, which involved crediting revisions, extensions, and new horizons back to year of field discovery; the criticism having been that figures for the more recent years were low to the extent that they could not include the further development yet to be done. DeGolyer conceded that this criticism was valid but stated that liberal figures were credited to the more recent years, while fields more than a year or two old generally were fairly well or completely defined. He contended, further, that for the broad purpose of the table, which was to show the basic trend, the figures used were quite satisfactory; that the trend would still be definitely one of increased difficulty in finding oil, even by increasing data for the recent years to the highest levels to which they could be reasonably expected to be revised in future years. He disagreed with a critic who said it might take 5 years to fully determine the reserves contained in a field, pointing out that maps had been published showing the outline of the great East Texas field within several months after discovery.

In his paper, DeGolyer stated that PAW and its predecessor, OPC, had urgently requested the oil industry to increase exploratory effort throughout their 18 months' existence but that the warnings and exhortations had been received by the industry with an "understandable passiveness," because capacity to produce still remained for the time being in excess of current needs.

This part of the paper brought later from John D. Gill, a director of Atlantic Refining Company and head of the Petroleum Industry War Council's committee for study of impacts of the war on the industry, the assertion that the industry was doing all that it could under existing conditions; that DeGolyer himself had just stated that wildcatting and exploratory work were at record levels. Gill further contended that if the industry were free to solve the problem in its own way it could be depended upon for the solution. The industry did do something about shortages in the past, he declared: prices were adjusted upward, drilling increased, and always suffcient new oil fields were found.

Results of Exploratory Drilling

(Table from AIME paper by E. DeGolyer, Assistant Deputy Petroleum Administrator.)

YEAR	Total Wildcat Wells Drilled	Successful Wildcats	Number New Fields Discovered†	Total New Reserves Found* Million Bbls.	Discovered Per Field Million Bbls.
1934	.....	.....	86	1,699	19.7
1935	.....	.....	104	1,934	18.6
1936	.....	.....	104	1,894	18.2
1937	2,224	222	148	2,119	14.3
1938	2,638	294	166	1,894	11.4
1939	2,589	224	170	943	5.6
1940	3,038	302	217	945	4.3
1941	3,264	503	209	361	1.7
1942	3,045	493	261	317	1.2

* Revisions, extensions, and new horizons are credited back to year of field discovery.
† Fields discovered are oil fields only, therefore differ from successful wildcats to the extent of number of gas producers, extensions and those that found deeper producing horizons in established fields.

Wise Scrap Salvaging Is More Beneficial To All

By FRANK BRIGGS, Staff Writer

Continued regular salvage program essential to war effort, but much of its value wasted unless (1) scrap is properly segregated according to metal content; and (2) parts for which there are constant needs around a lease are saved to prevent necessity of purchasing new replacements.

THE salvage program of the nation is one of the most vital functions undertaken by the "home front" and similar to all programs working under the duress of war, confusing and delaying problems have cropped up within the salvage machinery. One major contributor of scrap to the steel mills is the petroleum industry, and in general, its salvage processes have offered a constant stream of charge for the furnaces. Even in this industry, though the returns could be increased by better cooperation among the companies in handling scrap from isolated localities, by more efficient dealers, and by regular periods for turning in the scrap collection.

Similar to the farmer, the great source of scrap obtained from the petroleum industry is located on isolated leases, where under present price conditions as well as transportation difficulties, there is not much attraction for the dealer to make long hauls of the material. Should regular periods for turning in scrap be instituted by various companies operating in an area, cooperative efforts could be pooled in the hauling of the combined scrap pile for each period. This may conflict with planning board rules or suggestions, but it is a means to an end that otherwise may be securely bound with red tape.

A large amount of vital alloy scrap is wasted due to the lack of having scrap returns properly classified and shipped and paid for as such. The usual scrap dealer in the smaller shipping points knows nothing and cares less about classifying scrap for the valuable alloy content. Scrap is scrap and as such takes the same rate of pay and uses the same car for shipment. Nothing is more in error than this. The mills desire a segregation of the alloy steels from the ordinary steels, and make higher payments for alloy scrap.

Scrap Classification

The producing companies are cooperating with the government and the mills in properly classifying their scrap stock but lacking properly trained or informed dealers, this is largely wasted effort in many areas. Price and classification schedules have been set up by proper authority and through the cooperation of the oil companies, alloy scrap is segregated, but the system often falls down at the collection points.

In order to facilitate the identification of some of the more commonly used metals by the industry, one manufacturer of alloys has recognized that certain simple tests may be made in the field to aid in the segregation of scrap. The accompanying chart illustrates the simple tests to be made and the effect of these tests upon the various metals to identify them. The magnetic test may be easily made and will be most sensitive if the magnet is suspended on a string when bringing the test specimen within its magnetic field. A slight movement of the magnet will be observed if specimen is magnetic. The nitric acid test is made by placing one or two drops of concentrated acid on the cleaned surface of the specimen, then a drop or two of the diluted solution on another portion of the specimen surface and watching the reaction of both. If the nitric acid test forms green or blue solutions, a test for copper can be made by rubbing a clean iron nail on the specimen surface in the acid solution. If copper is present in the alloy, it will deposit out either on the nail or on the surface under the acid solution.

After identifying, the scrap should be assorted according to items as outlined by the various conservation orders and price schedules set up by the responsible agency. All items do not apply to the oil industry; one producing company, selecting possible items their personnel would come in contact with, uses the following tabulation of assorted items:

The price schedule (listed as No. 2) that sets the maximum prices on scrap aluminum classifies such scrap as:

A. Plant Scrap
   1. Clips or other 2S solids.
   2. Mixed clips or other 2S solids.
   3. Segregated borings and turnings.
   4. Mixed borings and turnings.

B. Obsolete Scrap
   1. Pure cable.
   2. Old sheets and utensils.
   3. Old castings and forgings.
   4. Pistons free of struts.
   5. Pistons with struts.

Order M-9-b requires the reporting and classification of copper and copper-alloy scrap as follows:

a. Brass mill scrap.
b. Unalloyed copper scrap.
c. Other copper scrap.

Copper-base alloys are defined as those materials containing 50 percent or more of copper by weight; unalloyed copper scrap includes such pure copper items as copper wiring, sheeting, tubings, etc.

The iron and steel scrap is classified under the terms of Conservation Order M-24 in the following manner:

a. No. 1 heavy melting.
b. No. 2 heavy melting.
c. Bundles.
d. Low phosphorus scrap.

Easy Tests for Identifying a Few Common Metals and Alloys

MATERIAL TESTED FOR	With Magnet	WITH NITRIC ACID		
		Concen. Solution	Dilute Solution	Solution Color
Nickel (Rolled)	Magnetic	Reacts slowly	Reacts slowly	Pale green.
Monel	Slightly magnetic*	Reacts	Reacts slowly	Greenish blue.
Copper-Nickel alloy (less than 60%)	Non-magnetic	Reacts	Reacts	Bluish-green.
Steel or Cast Iron	Magnetic	Reacts slowly	Reacts	Brownish black.
Chromium Stainless	Magnetic	No reaction	No reaction	Colorless.
Chromium-Nickel Steel	Non-Magnetic	No reaction	No reaction	Colorless.

* Monel will become magnetic when cooled—other nickel-copper alloys will not become magnetic under influence of temperature. (Table by International Nickel Co.)

e. Cast iron.
f. Turnings and borings.
g. Rerolling rails.
h. Scrap rails.
i. Chromium-nickel stainless steel.
j. Chromium base stainless steel.
k. All S.A.E. low alloy steels.
l. All other prepared scrap.
m. Unprepared scrap.

Nickel-iron alloys containing over 20 percent nickel and nickel-chromium alloys containing over 50 percent nickel should be classified under nickel and nickel-alloy scrap. Order M-6-c classifies this category as follows:

A. Nickel (metallic)
   1. Clippings, sheets, strips, etc.
   2. Rod and bar ends.
   3. Turnings.
   4. Other.
B. Monel
   1. Clippings, sheets and strips.
   2. Rods and bar ends.
   3. Turnings.
   4. Castings.
   5. Other.
C. Inconel
   Same listing as items under monel.
D. Nickel-iron alloys (with nickel content of 20 percent or more).
E. Nickel-chromium alloys (with nickel content of 50 percent or more).
F. Other nickel scrap containing 10 percent or more nickel.
   1. Spent catalysts.
   2. Washings.
   3. Dresses and sludges.

Tin scrap is classified according to form, such as tin tubing, and does not include tin-plated steel items.

Lead scrap is classified under the terms of price schedule (No. 70) and may be itemized as follows:

a. Soft lead scrap.
b. Hard lead scrap.
c. Battery lugs.
d. Lead covered cables.
e. Cable lead.

The salvage of materials does not stop with metals; burlap and cotton bagging, rags, rubber goods, waste paper and miscellaneous items are much in demand and price schedules have been set up on these other products, which most companies are regularily including on their salvage program.

Aside from the classification of materials, another important phase of the salvage program is the maintenance of adequate records of the scrap available. One easily understood form for such records has been adopted by a major oil company for its warehouse reports; from this form, the required government information can be presented.

CLASS OF MATERIAL	GRADES	On Hand Beginning of Month	Sold During Month	On Hand End of Month	Quantity in
Aluminum Scrap	( )( )				Pounds
	( )( )				
Bags, Burlap	(A) New				Each
	(B) Used				
Bags, Cotton	(A) New				Each
	(B) Used				
Copper and Copper Alloy Scrap	(A) Brass Mill				Pounds
	(B) Unalloyed				
	(C) Other				
Iron and Steel Scrap	( )				Gross Tons
	( )				
	( )				
	(M) Unprepared				
Lead Scrap	( )				Pounds
	( )				
Nickel and Nickel Alloy Scrap	( )( ) % Ni.				Pounds
	( )( ) % Ni.				
	( )( ) % Ni.				
	( )( ) % Ni.				
Rags	( )				Pounds
	( )				
Rubber					Pounds
Tin					Pounds
Waste Paper	( )				Pounds
	( )				
Miscellaneous					Indicate Unit

Form used by producing company to record salvageable stock on hand. Segregation of items facilitates required governmental reports. This is a reduced reproduction of sheet. The original sheet is 7½ inches wide and 10¼ inches tall.

Company instructions to field personnel are specific about the disposition of any scrap encountered over the lease: don't walk over it, throw it near the roadside where it can be conveniently collected by the lease truck, and placed on the scrap pile. Salvage all of it.

There is another phase of the salvage program, however, that defeats the material conservation process; namely, that of discarding items used during the normal operation of the lease. For instance, old boilers make very good salvaging items; they have weight and are built of strong, alloy steel. Throw them in the pile. But suppose a boiler being used suddenly develops a damaged tube sheet; the supply store has none due to material shortages, the neighbor has used his last extra sheet. Those old sheets on the obsolete boiler, turned in yesterday, would have suited. Too late, the boiler is shut down, the drilling rig or the plant must wait now until a new one can be obtained from the factory or made by the local machine shop whenever he gets around to it. Boiler sheets are not typical; perhaps engine parts are most easily damaged and more often in demand and irreplaceable. Perhaps 70 percent of the complete obsolete unit may be discarded in the salvage pile, but when items composing the unit are serviceable and are constantly in demand around the lease or warehouse, these items should be salvaged from the unit and saved for the emergency that will develop. It defeats the conservation program by requiring the purchase of new material for use where second-hand items might have served very well.

In this time of material shortages such practices as using old, fatigued sucker rods for pull rod lines, reconditioning balls-and-seats for use again, salvaged engine parts for replacement on operating equipment, obsolete or discarded casing for line pipe, road-crossings, conduits, heaters, etc., bull-wheel levers for turnbuckles or tie down bolts, connecting rods from gas engines for connecting links in back crank pumping —all "convertment" processes are necessary to the continued function of the production department for many of their once essential items have now gone to war.

Consequently, despite the urgent need for scrap metal, judgment must be exercised in putting many items in the scrap pile or the necessity of replacing some of the parts may more than offset the amount collected. Some companies find it beneficial to inspect such items as engines, boilers, etc., and save the parts in good condition that may have later use.

Special Truck for Transporting Equipment in Sandy Areas

Condemned airplane tires, on special hubs to fit shafts of pick-up truck, provide traction and cushioning for rough, sandy terrain travel

MUCH time on set up and preliminary check can be saved by careful transportation of such instruments as torsion balances, use of such equipment in areas of deep sand practically demanding special hauling equipment. Mark Whelan, geophysicist of Meadow, Texas, found the sand of the areas in which he was working an obstacle which practically tied up standard-tired vehicles, and to attain quicker moves with his equipment, secured a 1931 Model A Ford truck, with lowest available differential gear ratio and four-speed transmission.

The wheels were made by uniting two standard five-lug wheels with circumferential weld after first cutting off the inside flange of one and the corresponding inside flange of the other, taking the hub out of the outer half of the built-up wheel.

Such a wheel affords sufficient width for standard airplane tires, those in front being 16 x 16 and the rear 16 x 17, all 10-ply. The tires used are those condemned as unsafe for further flying use, but are amply strong and serviceable for a truck which, by nature of the terrain, must move but slowly.

A small hand winch mounted on an extended front end and a short-legged A-frame on the rear make it possible to go into deep sand and retrieve other units which may have broken down and which must be moved with the damaged end elevated to afford clearance and freedom of travel.

By fitting the special deep-sand model with brackets, retainers and sockets which are identical with those used on the regular highway - tire - equipment pick-up trucks, transfer of equipment from the high-speed conveyances to the one designed to negotiate deep sand is easy, and accomplished without requiring extra help.

The airplane-tired truck has, so far, failed to encounter any sand beds too deep for it to negotiate without faltering, the wide tire and low gear ratio providing a grip which will neither chatter nor spew out sand when starting.

(Above) Driver's side of sand-hog truck for conveying torsion balance and equipment. The wide hubs formed by joining two standard units afford ample base for reclaimed airplane tires, and fit standard axle equipment. Wide fenders prevent tire damage from equipment.

☆

A hand-powered winch on the extended front frame of this converted Model A truck rounds out the overall serviceability of this unit, enabling it to be used for wrecker service when other units break down or become stalled in the heavy sand. Individual carriers afford ample protection to special geophysical equipment.

War Makes Proper Care of Air Compressors Essential

Air compressors are built to withstand long, severe use, but in these days of restricted replacement, they require special care if they are to meet the stepped-up service now expected of them. Proper starting, maintenance and lubrication are of great importance in keeping this important unit operating efficiently. The Compressed Air Institute, through its press service department, has prepared the accompanying article on compressor care which covers points of importance.

EACH of the separate units which goes to aid in making up the integrated pipe-line station, compressor system, or other power installations used in drilling for, producing, moving or refining oil is of key importance to the petroleum industry in these days when it is called upon for large quantities of products, with constantly diminishing stocks of repair and replacement materials. Every piece of equipment must receive special care if it is to continue to function satisfactorily past the time when it normally would be withdrawn from service and overhauled, or perhaps replaced by new units. One of these special units which, by nature of its service, requires special attention and individualized upkeep is the air compressor.

The equipment which goes to make up a complete compressed-air system; the compressors, compressed-air lines, intercoolers, after-coolers, and receivers, needs constant care if they are to perform their duties efficiently with the minimum of maintenance and service interruption, and thus to keep operating at capacity.

In the operation of compressed-air equipment, it is important that the original installation be correctly made, that the compressors and pipe lines be properly placed with respect to each other, that lubrication be carefully carried out, that the whole unit be kept clean, protected from dust and dirt, and systematically inspected and maintained.

Starting Up a Unit

In starting a new reciprocating compressor or an old one which has been overhauled or is being put on the line after being out of operation for sometime, it is necessary to see that the crankcase is carefully cleaned of grit and other foreign matter and filled to the proper level with suitable oil. Cylinder lubricators likewise should be flushed and filled with oil suitable for cylinder lubrication.

The operator is cautioned never to use kerosine, gasoline, or other light petroleum products in flushing out cylinders or compressor frames. They are volatile and dangerous to use. It is better to waste a little lubricating oil in the process. Care should also be taken not to use waste or rags which leave a lint deposit, possibly to clog oil passages, block close clearances or possibly ignite under compression temperatures.

When mechanical lubricators are filled, it is good practice to break each oil-line joint nearest the cylinder or feed point and crank the lubricator by hand until oil appears at the open joints. This done, the operator can reconnect the piping with assurance that the cylinders will be provided with oil immediately upon starting.

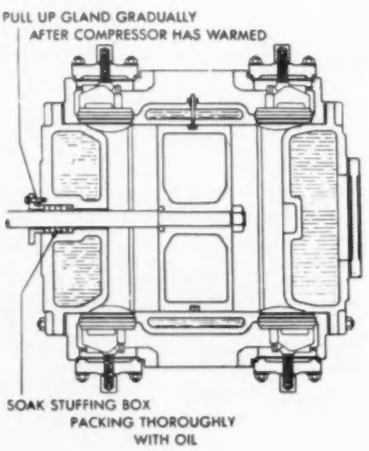


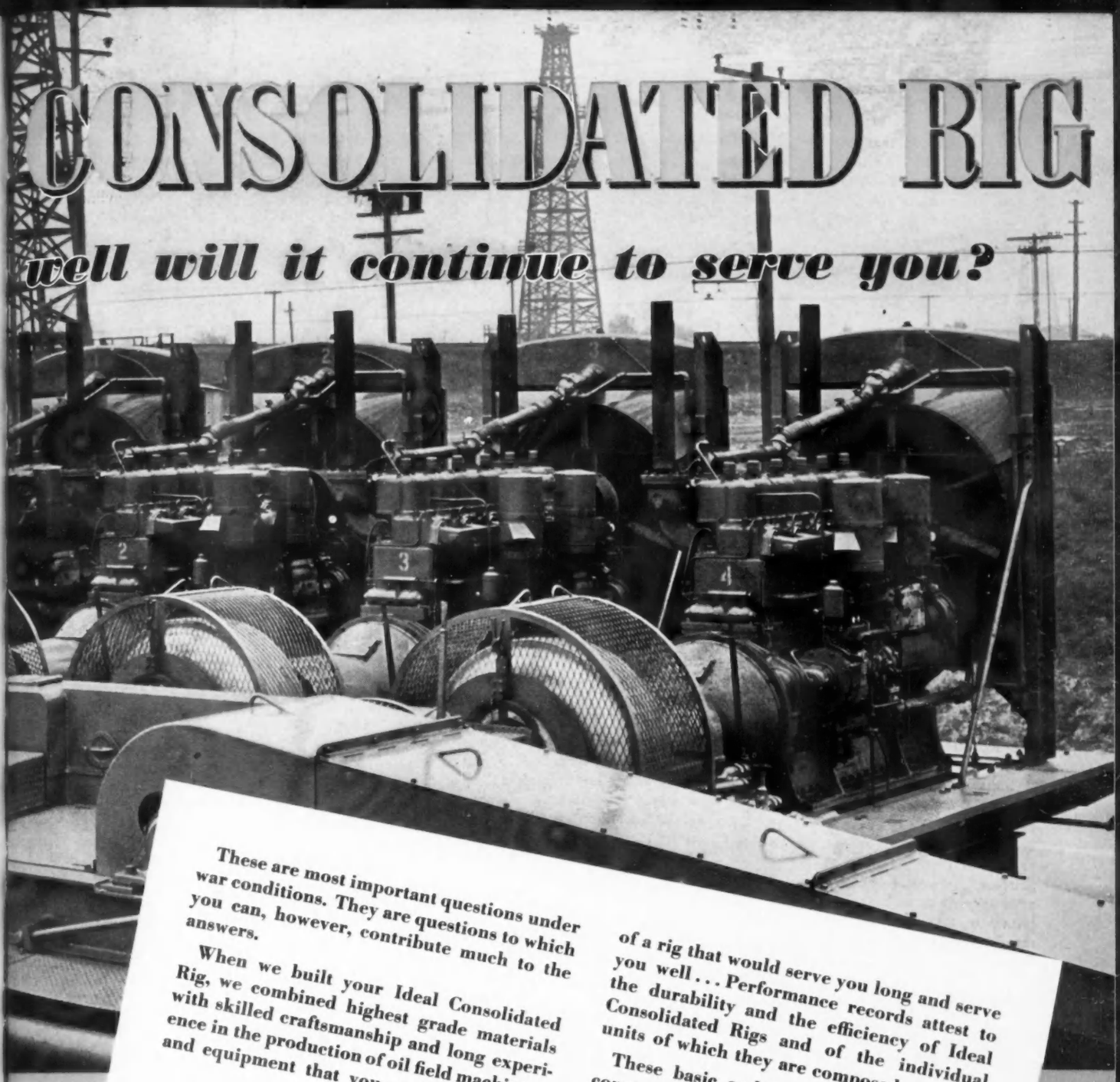
FIGURE 1

Packing of stuffing boxes should be carefully done, with the packing thoroughly soaked with oil. The gland should be pulled up gradually after the compressor has warmed up, and tightened just sufficiently to prevent blowby along the rod.

Packing of the stuffing boxes should be carefully done. Any packing used should be thoroughly coated with oil. If soft packing is to be employed, it should be soaked in a suitable compressor oil overnight so as to impregnate it as thoroughly as possible. The packing should not be pulled too tightly at the start, as this is liable to score the piston rods; rather the gland may be pulled up gradually after the compressor has warmed up and tightened just sufficiently to prevent blow by along the rod. (See Figure 1.)

Before starting, make absolutely certain that the intake line has been thoroughly blown out and cleaned of all dirt, welding shot, scale, and other foreign matter. Many new or overhauled compressors have had their valves and cylinder walls badly damaged by sucking in such foreign matter.

The cooling water should then be turned on to make sure there are no leaks in the water lines or in the cylinder jackets and that there is no stoppage of water flow. Jacket lines should



CONSOLIDATED RIG

well will it continue to serve you?

These are most important questions under war conditions. They are questions to which you can, however, contribute much to the answers.

When we built your Ideal Consolidated Rig, we combined highest grade materials with skilled craftsmanship and long experience in the production of oil field machinery and equipment that you could be assured of a rig that would serve you long and serve you well . . . Performance records attest to the durability and the efficiency of Ideal Consolidated Rigs and of the individual units of which they are composed.

These basic and intrinsic values will, if conserved, keep your rig operating efficiently and economically beyond the customary expectancy of service.

We Recommend the Following Maintenance Schedule:

DRAW WORKS AND DRIVE GROUP:

1. Maintain adjustments of all friction clutches and replace worn out parts that impair efficient operation.
2. Keep all roller bearings properly lubricated.
3. Make frequent inspection of all positive clutches and shifter mechanisms.
4. Check air control equipment for leaks—connections, lines, valves and compressor unit.
5. Chain and V-belt drives should be systematically inspected for correct tension and alignment. Proper lubrication prolongs chain life.

ENGINES:

1. Avoid continuous overloading. It may become necessary to change to smaller pump liners as the well gets deeper.
2. Change crankcase oil at regular specified intervals and use only high quality lubricants.
3. Keep all filters clean.
4. Inspect engines frequently to detect worn or stuck piston rings, valve wear and clearances, and correct immediately.
5. Maintain proper clearances of main and connecting rod bearings at all times.

be so connected that the flow of water may be observed either into an open funnel on the discharge or by means of sight pressure glasses, if a closed system is used (see Figure 2). The circu-

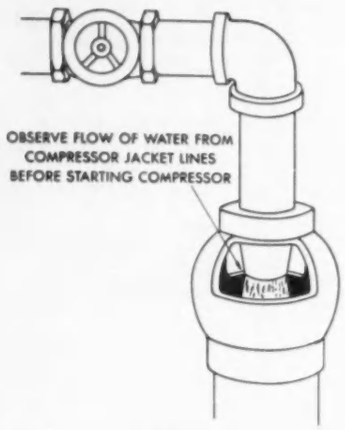


FIGURE 2

It is important that the flow of water through jacket lines be observed. An open funnel as shown here or sight pressure glasses are recommended.

lating water lines from both cylinders and coolers should have drain valves at the lowest points to permit the entire system being drained in cold weather if the equipment is shut down.

To make sure that all parts are clear before starting the compressor, the operator should turn the equipment over several times by hand. To start the compressor, the power should be turned on gradually. It is well during the first few hours to start and stop the machine intermittently, feeling the various bearings for excessive temperature. It is common practice to run in a new machine with the compressor values removed in order that the equipment may be broken in gradually under no load. Make certain when starting up that all working parts requiring lubrication are getting plenty of oil and that no part is heating up. After several hours' operation in this manner, the valves may be replaced, making certain that the jam screws which hold the valves on their seats are screwed down firmly. The machine may then be started with all the valves installed, being careful to build up the pressure slowly over a period of several hours.

If the source of power is steam, the drains on the steam cylinder and the steam pipe above the throttle must be opened before the compressor is started, to eliminate condensation. The throttle valve should be open a very small amount before starting to permit a small amount of steam to pass into the steam cylinders to heat them up gradually. After these cylinders are heated, the throttle valve should be open a very small amount mit the compressor to turn over slowly. If the compressor is of the single-crank type, it may be necessary before starting to bar it over beyond dead center.

In the operation of air compressors, it is excellent practice to establish an engine-room log requiring the recording of operating data at definite periods throughout the day; also the log should record what routine daily inspections must be made, as well as what weekly and what monthly inspections should be established. As an example, instead of running the compressor without shutdown until there is evidence of a broken part, the valves should be removed and carefully examined every 6 months (every 2 months if the equipment is in 24-hour daily use). The log should also require an examination of the cylinder walls, to make certain the cylinder is

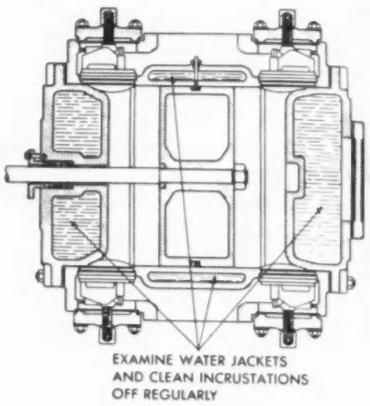


FIGURE 3

Water jackets of compressors must be examined at frequent intervals and should be thoroughly cleaned regularly.

properly glazed and adequate lubrication is provided. The interior of compressor cylinders may be examined by the aid of a flashlight by removing a valve.

If the equipment is operating properly, the valves should have an oily surface and be comparatively free from carbon. When reassembling, the operator should be careful to keep each valve assembly together and not to interchange parts. If any head gaskets are replaced, extra care should be taken to insure water ports being cut in the gaskets, which must correspond in size and location with the ports in the cylinders and the heads. Failure to do this would

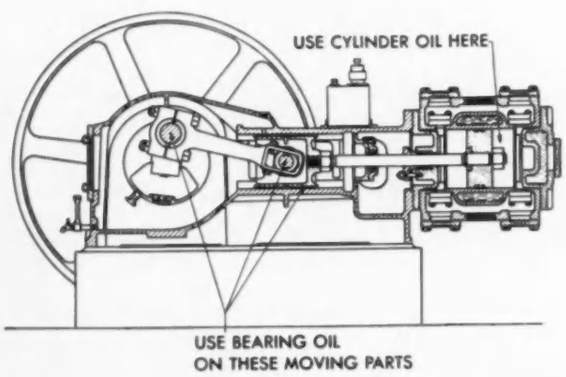


FIGURE 4

Compressor cylinders require cylinder oil and the running gear, crankcase or bearing oil.

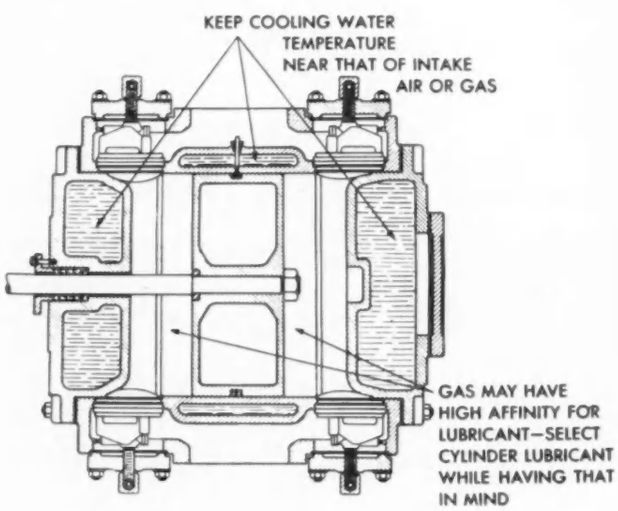
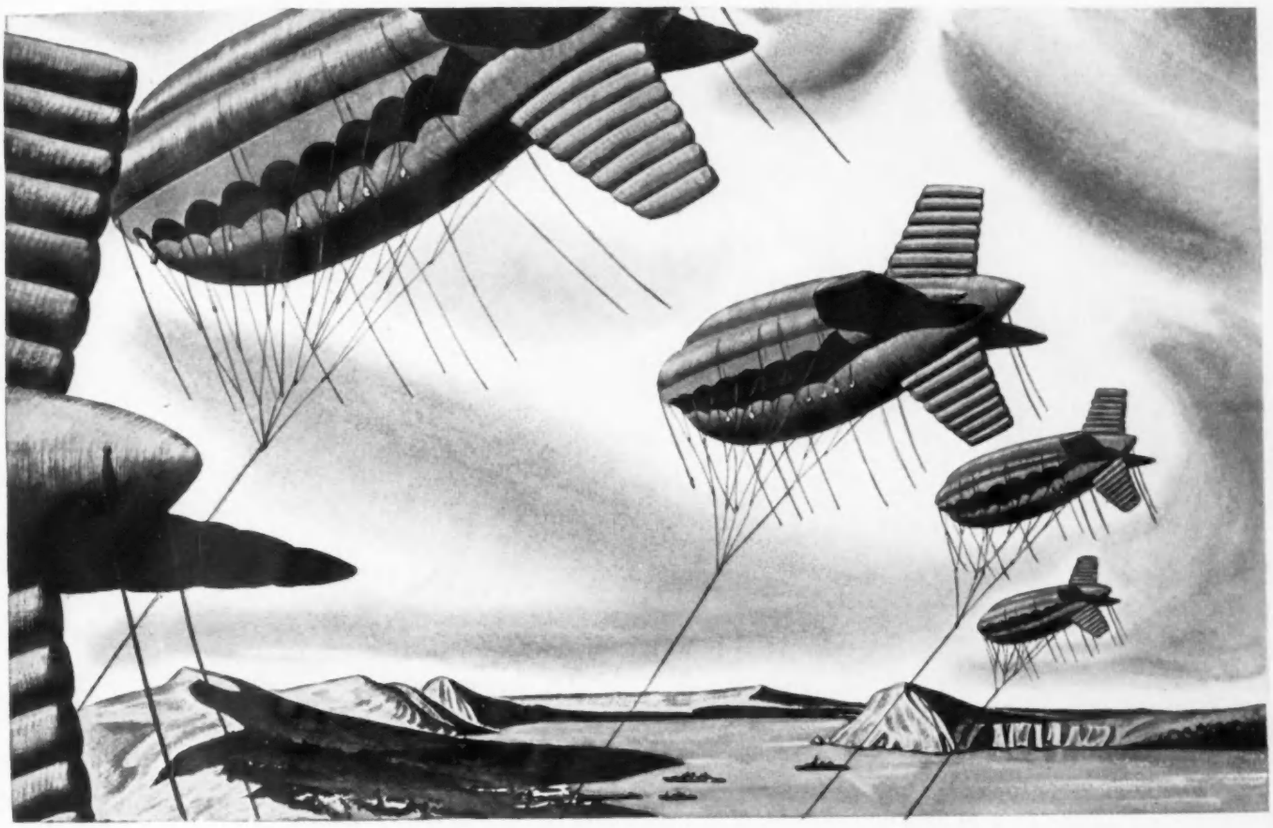


FIGURE 5

The temperature of the cooling water should be as close to the temperature of the air or gas in the compressor as possible, to minimize the condensation on the cylinder walls.



THE SUN IS *Not* THEIR UNDOING

It takes more than a war to change some things. For instance, the ability of fine flakes of aluminum to reflect solar rays.

Actually, the war is demonstrating again the value of this property possessed by aluminum pigment. The fabric of barrage balloons is coated with aluminum. The object, to reduce gas expansion and contraction caused by variations in solar heat. An additional value of the aluminum coating is its protection of the fabric against weathering.

With oil refiners this use of aluminum paint strikes a familiar chord. They have long used its reflectivity to reduce evaporation in storage tanks. And in other industries aluminum paint has been used to shunt heat off roofs of buildings and keep the interiors cooler.

Because aluminum paint has a way of retaining its reflective efficiency for a long time, many of these tanks and buildings continue to enjoy its benefits even though the war has made repainting with aluminum impossible. But someday . . .

SOME DAY YOU'LL BE USING
Aluminum Paint
AGAIN

ALCOA ALUMINUM ALBRON

ALUMINUM COMPANY OF AMERICA

1949 GULF BUILDING, PITTSBURGH, PA.

MAKERS OF ALCOA ALBRON PASTE PIGMENTS, MADE UNDER PATENTS OF METALS DISINTEGRATING COMPANY, INC.

cause overheating and possible serious damage.

At predetermined periods, the entire compressor should be carefully inspected for the presence of worn parts, new packing where needed, changing of oil in the crankcase, and inspection for complete overhaul of the equipment if it has had considerable use. If the inspection system provides definite routine inspection for every purpose, the equipment will be very much better maintained and cared for, with less interruption to service and lower cost of compressed air.

It is essential to examine the water jackets (Figure 3) at frequent intervals and thoroughly clean them. Their condition is the best evidence of the suitability of the cooling water that is used. The presence of heavy, hard scale in the jackets forms an insulation which prevents effective heat interchange. The jackets can be cleaned either by a pressure jet of water for any silt or other soft deposits, or by dilute acids if the scale is hard. The acid, 10-percent hydrochloric (muriatic), may be forced through the jackets by a small circulating pump, or by running it from a container placed above the cylinders. It is important to neutralize the acid effect in the jackets with alkali after the acid treatment to avoid any damage being done to the metal exposed to its attack. Inhibited acid will remove scale with minimum risk to equipment.

In the operation of two-stage compressors, a disturbance of the normal intercooler pressure is one of the first indications of trouble. If the intercooler pressure rises, there may be something wrong in the high-pressure cylinder, such as leaky or broken intake valves or a defective piston ring. If the intercooler pressure falls below normal, trouble may be looked for in the low-pressure cylinder. Such a defect may also be observed by overheating of either discharge or suction valves. If the valve covers are unusually hot, there is evidence of leakage, which may be either in the valve or a blown out gasket between the valve and the cylinder. If there is a metallic knock in the compressor cylinder during each revolution, there is evidence of something being loose. The valve jam screw may not be holding the valve firmly against the cylinder, the pressure causing the valve seat to clatter against the cylinder; or the piston may be loose on the rod. These warnings should be promptly investigated to head off any serious damage about to occur. For instance, if the jam screw is not down tight, allowing the valve to pound up and down every revolution, the valve seat may break, causing a broken part to fall into the cylinder. The machine may be very seriously damaged by such a broken part falling into the path of the piston. Most cases of broken valve seats are caused by the valve being loose, although such a condition always gives ample warning.

TABLE 1

Cylinder Diameter, Inches	Piston Displacement per Cylinder, c.f.m.	Swept Surface per Cylinder Square Feet per Minute	Oil Feed per Cylinder	
			Drops per Minute	*Pints per 10 Hours
Up to 6	Up to 65	Up to 500	2 d. in 3 m.	.05
6 to 8	65 to 125	500 to 750	1	.075
8 to 10	125 to 225	750 to 1,100	4 d. in 3 m.	.10
10 to 12	225 to 350	1,000 to 1,500	1–2	.112
12 to 15	350 to 600	1,500 to 2,000	2–3	.188
15 to 18	600 to 1,000	2,000 to 2,600	3–4	.262
18 to 24	1,000 to 1,800	2,600 to 3,600	4–5	.338
24 to 30	1,800 to 3,000	3,600 to 4,800	5–6	.412
30 to 36	3,000 to 4,500	4,800 to 6,000	6–8	.525
36 to 42	4,500 to 6,500	6,000 to 7,500	8–10	.675
42 to 48	6,500 to 9,000	7,500 to 9,000	10–12	.825

* Figures in last column are based upon 8,000 drops per pint at 75° F.

Lubrication

Under the augmented loads of wartime demands, when air and gas compressors are driven at maximum capacities for 24 hours per day, 7 days out of every week, lubrication must be carefully maintained. Improper lubrication or equally as serious lack of lubrication may cause serious delay or drop in production or throughput by failure of equipment at a critical time.

When lubrication is improperly carried out, and damage to cylinder walls, bearings or valves results, a major shutdown for repairs is inevitable, and much time may be lost while procuring the necessary replacement parts, or even in the reworking of present units.

Lubrication involves the complex problem of selecting the proper oil for the part to be lubricated and in seeing that the oil is properly applied and in the proper amount.

The first rule in proper lubrication of compressors or any other machinery is to use oil according to any special specifications which may be prescribed by the compressor manufacturer, and then deal with a reputable oil company which is willing to guarantee a lubricant of maintained specification satisfactory for the service for which it is intended.

As many as three different types of oil may be required by a reciprocating compressor, one type for the compressor cylinders, another for the bearings of the driving gear, and a third for the power cylinders, provided the source of power is steam, diesel, or gas engine.

Oil intended for compressors of the single-acting trunk piston type must be suitable for both the compressor cylinders and the running gear, and must be of the type known as compressor-cylinder oil with specifications suitable for the particular machine. Double-acting piston-type compressors, in which the frame running parts and the compressor cylinders are completely separated, require cylinder oil for the compressor cylinders and crankcase or bearing oil for the running gear (see Figure 4).

Compressors vary so widely as to type and use as to make it impossible to prescribe an oil specification completely suitable for every condition. The following specifications for compressor cylinder oils are taken from the Trade Standards of the Compressed Air Institute, which would apply generally to most air compressor installations. These are:

Flash point .....350° F., minimum
Viscosity S.S.U. at 100° F.....245 minimum
Viscosity S.S.U. at 210° F..... 45 minmum
Pour point, plus 35° F.....Maximum
Neutralization Number .....0.10 maximum
Conradson carbon residue 2.0 percent maximum

Special requirements call for special treatment. If a gas compressor, special consideration must be given the question of cylinder lubrication. Various gases have a high affinity for oil, leaving the cylinder walls dry and unlubricated. If the cooling water is of a much lower temperature than the incoming air or gas, condensation is formed on the cylinder walls, with resulting poor lubrication. The answer in such cases may be to heat the cooling water to more nearly the temperature of the intake air or gas (see Figure 5). The ratio of the initial and final pressures developed in cylinders has an important bearing on the oil selected, as this in great measure determines the maximum temperature prevailing in the cylinder. The size and the speed of the compressor also has considerable influence on the discharge temperature of a compressor cylinder.

The amount of oil required in a compressor cylinder will vary somewhat with the type of machine, its speed, and local conditions of operation. It is good practice to use oil liberally while the machine is new and until the cylinders have been glazed. The quantity of oil should then be gradually reduced, using care to examine the cylinders occasionally by removing a valve to ascertain that the walls are amply coated with oil. Provide an ample amount of oil, but do not overlubricate, as excessive oil in the discharge is very undesirable and to be avoided. Table 1 gives the minimum allowable rate of feed under ideal operating conditions, but the use of this table should be amplified by frequent examinations of the cylinder walls as previously stated.

Steam cylinder oil may vary appreciably, depending upon steam temperature. For moderate steam temperatures,

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the following specification as taken from the Trade Standards, is offered:

Flash point	500 F., minimum
Viscosity S.S.U. at 210° F.,	Seldom less than 100
Pour point	80° F., maximum
Conradson carbon residue left on evaporation	4.5 maximum
Compounding	0 to 12 percent maximum

Entirely different considerations are required for the lubrication of both rotary compressors and centrifugal compressors and exhausters. Most of the different types of rotary compressors and vacuum pumps employ different lubricating specifications. It is extremely important to follow the instructions of the manufacturer carefully.

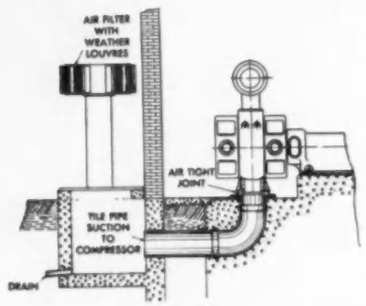

FIGURE 6

The intake pipe should be turned upward so that the air is taken from at least 10 feet above the ground, to avoid sucking grit from the ground level, and it should be protected from the weather so that the rain is not permitted to enter. The intake pipe should be as short and direct as possible.

Centrifugal compressors and exhausters require bearing lubrication only, and in overhung units with no bearings of their own, only the driving mechanism is lubricated. Ball or roller type anti-friction bearings on small pedestal or multi-stage units require grease or oil in the usual manner. Larger and higher speed units generally have pressure-lubricated sleeve bearings. Consult and follow closely the manufacturer's recommendations.

Auxiliary Upkeep

Even the most efficient and carefully maintained compressor cannot give the high standard of service necessary to meet the maximum war demand unless the auxiliaries which go to make up the complete plant, such as piping, after-cooler, receiver and valves are properly designed, installed and maintained.

Starting at the intake, it is important that the air be drawn from as cool and clean a location as possible. The weight of air handled by a compressor varies inversely as the absolute temperature of the intake. If, therefore, the intake can be reduced from 80 to 60° F., the compressor will handle about 3.75 percent more capacity. If dust or foreign matter is continually drawn into the machine, it causes rapid wear of the working parts, which means high maintenance and interruption of service. Much fouling of the intake may occur if the intake line is near an exhaust or stack which belches smoke, fumes, and harmful dust, or if the intake opens out onto a highway, railroad line, a plowed field, or is near a coal or ash bin or a crushing plant.

Efficient filters should always be installed on the intake of compressors, and the operating log should call for cleaning these filters at stated periods. The intake should come from outside of the building where the air can be obtained as cool as possible. It is often beneficial to have the air intake near the roof of the building, if the air is of better quality at that point, or on the north side of the building rather than the hot side, if convenient. The intake pipe should be turned upward so that the air is taken from at least 10 feet above the ground, to avoid sucking grit from the ground level, and it should be protected from the weather so that rain is not permitted to enter (see Figure 6).

The intake piping should be as short and direct as possible, with long radius elbows where turns are necessary. If not over 12 feet, the intake pipe diameter should equal the diameter of the opening of the compressor cylinder; if the pipe is longer, its diameter should be increased to the next size larger.

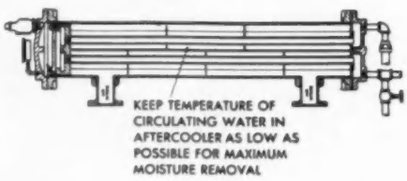

FIGURE 7

Circulating water in the aftercooler should be at as low a temperature as possible for maximum moisture removal.

The necessity for thoroughly cleaning of suction lines cannot be over-emphasized. Welding shot, scale, or other foreign matter when pulled into a compressor frequently is the cause of serious damage to the compressor cylinder. Always make certain that this pipe has been thoroughly cleaned. And the frequent finding of a pair of overalls in the suction line is not just a myth.

If a large cemented tunnel is used for the suction line, it should be carefully glazed and surface-treated to insure against cement dust being pulled into the compressor.

Above ground, the pipe should be standard steel or spiral riveted; below ground it may be of glazed vitrified clay with all joints carefully cemented to make them water tight.

Discharge lines should be of ample size, for lines of too small diameter result in excessive pressure drop. Larger pipe lines are especially desirable where the air lines are long. Sharp bends and elbows also increase the friction loss and should be as few as possible.

Air from the compressor discharge contains moisture, which is deposited as the air is cooled while traveling through the air lines. The presence of water in the lines is very harmful for many reasons. It may give rise to leaks at the joints or it may freeze in the pipes in exposed places. The major danger, however, occurs to pneumatic tools where the water, by washing off the lubrication, causes the tools to wear very rapidly, and in other ways, inteferes with their normal operation. Water in the compressed air causes a loss of manhours where the air is used for blowing chips, etc., as the operator must blow the lines free of water before he can use air.

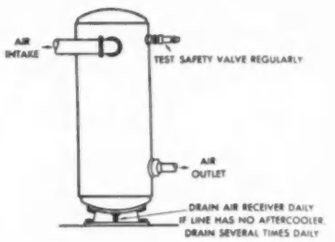
AIR INTAKE
TEST SAFETY VALVE REGULARLY
AIR OUTLET
DRAIN AIR RECEIVER DAILY
IF LINE HAS NO AFTERCOOLER, DRAIN SEVERAL TIMES DAILY

FIGURE 8

The drain cocks at the bottom of air receivers must be drained daily, but if aftercoolers are used in the system, the receivers should be drained several times during the day. Safety valves on receivers should be tested occasionally by lifting the valve levers or raising the pressure to operate them to insure their being in proper condition.

Aftercoolers are installed to remove as much of the moisture in the compressed air as possible at the compressor before entering the main air lines. It is obvious, however, that the amount of moisture that can be removed by the aftercooler depends largely upon the temperature of the cooling water. Therefore, the circulating water for the aftercooler should be as low a temperature as possible for maximum moisture removal (see Figure 7). It is also obvious that, if the air in the air lines is cooled by room temperature to below the temperature of the air at the outlet of the aftercooler, some additional moisture will be precipatated in the air lines, although the amount will be small.

The aftercooler should be placed as near to the compressor as possible, and a receiver of liberal size should be installed directly beyond. The receiver is helpful in taking care of instantaneous peaks but its use is primarily to eliminate pulsations in air lines and permit

[*Continued on page 28*]

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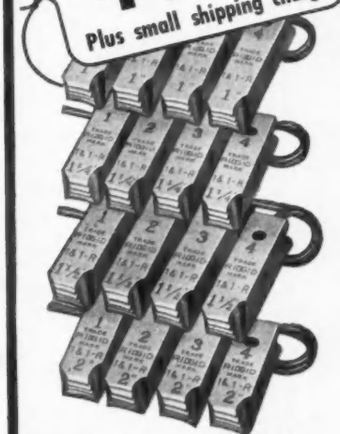

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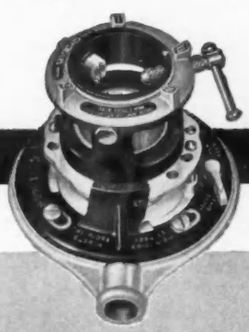

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Amplified Curves Widen Value of Electric Logs

Amplification of third curve brings out features not distinguishable on the normal run where a high percentage of connate water or an abundance of volcanic ash exists in a formation

By L. RAYMOND DAWSON, JR.,
Lane-Wells Company

A HIGH percentage of connate water and/or an abundance of volcanic ash in a formation will have a dampening effect on the third and fourth curves of electric logs, and under normal sensitivities they will show very little definition of fluid content. This makes it almost impossible to determine oil-water contacts and, in very many cases, even the presence of oil and/or gas is not apparent on the normal sensitivity run.

In Southwest Texas, where these conditions are numerous, an amplified third curve is being run as an addition to the normal run. This amplification brings out features in the third curve that are not distinguishable on the normal run, but which show up as variations in character when amplified. Figure 1 is the detail run over a producing horizon with the curves run on normal sensitivities. From examination of the resistivity curves, fluid content or any oil-water contact cannot be determined from the normal log. Figure 2 is the detail section over the same horizon with the third curve amplified four times normal and placed on the section in solid line. This is done to eliminate any loss of character by dotting. To eliminate confusion the normal and fourth curves are not shown; however, if the operator has so directed, the natural-potential and normal curves as well as the third curve could have been amplified in order to bring out details of formation character along with fluid indications. In Figure 2, a vertical dashed line, A, was drawn from the third curve shale line at 4290 feet and extended to intersect the amplified third curve at 4335 feet. This intersection is the effective water level and

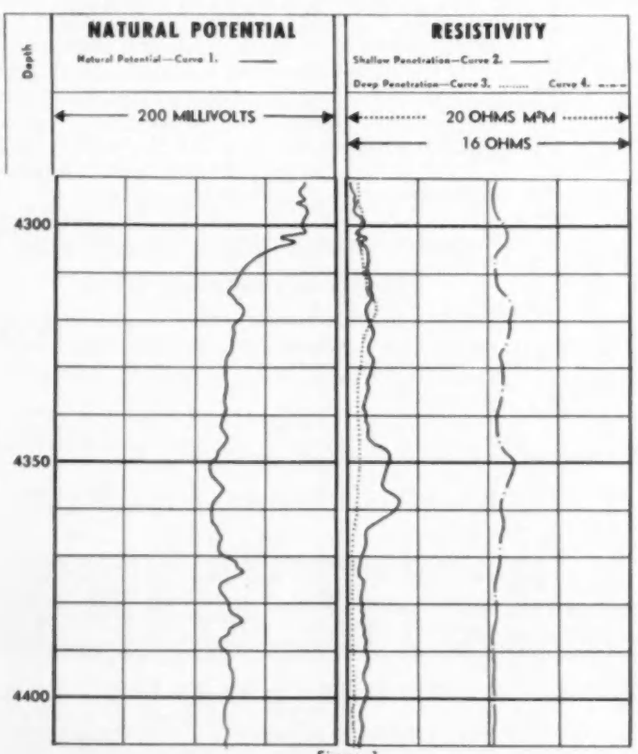

Figure 1

Detail Section over the producing horizon of a well in Southwest Texas Run on Normal Sensitivities for all Curves.

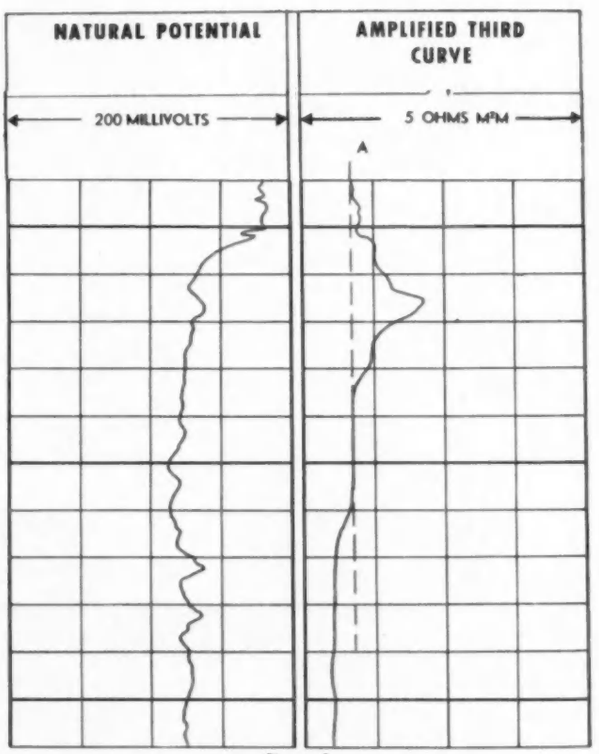

Figure 2

Amplified Third Curve Section over the same horizon shown in Figure 1, with the Natural Potential Run on Normal Sensitivity and the Third Curve Four Times Normal. "A" represents shale line.

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was within 1 foot of the cored water level. From 4335 feet to 4360 feet is salt water sand, probably with medium saline content, and from 4360 feet down is typical salt water sand of high saline content as indicated by the definite "bow-back" of the third curve. By comparing the two figures, it can be seen that the indications of fluid content on the amplified section are very clearly shown, but variations on the normal run are practically impossible to interpret.

These amplified sections have been presented as separate sections along with the normal log and require only a few minutes extra time to secure. They have helped tremendously in the interpretation of electrical logs in areas where these disturbing factors are prominent.

Invasion of Drilling Fluid

In numerous areas, particularly in the Wilcox Trend, invasion of the sands by the drilling fluid has complicated the interpretation of electrical logs. The third curve is comparatively useless as it has a high intensity in nearly all the sands. The fourth curve must be used for fluid-content determination, but even its deep penetration is affected over a period of time in drilling ahead. A fifth curve of even greater penetration is used to facilitate interpretation by getting beyond the range of formation invasion; and the fourth and fifth curves together are used as a basis for the interpretation of fluid content.

From experience it has been proved that there are a number of ways the operator can cut down the invasion and aid the proper interpretation of the log on his well. By using these methods the third curve may be employed and the little extra expense is negligible when considering the value of the information received. The procedure to be followed to obtain a better electrical log under these extreme invasion conditions is as follows:

1. Run an electrical log every 7 to 10 days when drilling in the Wilcox sand.
2. Run an overlap section each time a new run is made and check the changes of the curves.
3. Increase the saline content of the drilling fluid just prior to entering the Wilcox to reduce diffusion or ionization effects.

Care of Air Compressors

[*Continued from page 24*]

a steady and mean velocity through them. As a result, the air line beyond the receiver may be smaller than the line between the receiver and the compressor, which latter should never be choked down. Receivers should also be located in the various departments where the air is used, if these are some little distance away from the compressor

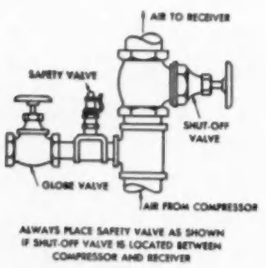
AIR TO RECEIVER
SAFETY VALVE
SHUT-OFF VALVE
GLOBE VALVE
AIR FROM COMPRESSOR
ALWAYS PLACE SAFETY VALVE AS SHOWN IF SHUT-OFF VALVE IS LOCATED BETWEEN COMPRESSOR AND RECEIVER

FIGURE 9

If a shut-off valve is placed in the line between a compressor and receiver and a safety valve is not also inserted as shown, serious damage to the machinery might occur.

house, in order to give a constant supply of reasonably dry air.

All air receivers have drain cocks located near the bottom which must be drained daily, or, if no aftercoolers are used in the system, the receiver should be drained several times per day on damp, humid days when the air contains maximum moisture. Safety valves on receivers should be tested occasionally by lifting the valve levers or raising the pressure to operate the valves, to insure their being in proper condition (see Figure 8).

It is obvious that a shut-off valve should never be placed in the line between the compressor and the receiver unless a safety valve is placed on the compressor side of the shut-off valve. Operators will forget to open the shut-off valve upon starting the compressor, causing serious damage to the machine (see Figure 9). For the same reason, it is necessary to install a safety valve between the compressor and the first shut-off valve in the pipe line, if the compressor is connected into an air main with other compressors.

Leaks in the piping system are perhaps one of the most common and most easily corrected losses in a compressor plant. Air leakage, unlike many other forms of pipe-line leakage, is easily found due to the noise of even a small stream of escaping air. The financial loss from leaks in compressed air lines can assume considerable proportions. The leakage of air at 100 pounds pressure through a single $\frac{3}{8}$-inch orifice would amount to roughly 6,000,000 cubic feet per month; at 6 cents a thousand cubic feet, this loss would amount to $360 per month. Air lines, air hose, shut-off valves, and other connections should be tested when the plant is not in operation, by charging the lines at working pressure and shutting down the compressor to see how rapidly the pressure drops.

There are, of course, various ways of testing for leakage, such as holding a candle flame close to the joint to see whether the flame will flutter; soapy water may be swabbed around the joints, and, if there is a leak, it will produce a soap bubble (see Figure 10).

All air hose connections should be made from the top of the distribution lines so that the hose will not pick up any moisture that may lie in the bottom

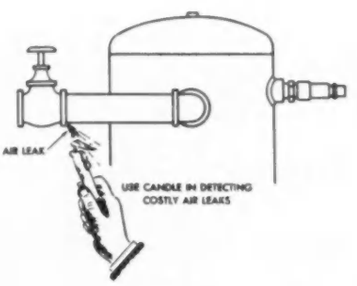

FIGURE 10

A candle flame may be used to detect leaks in air lines. To test for leaks in gas lines, soapy water may be swabbed around the joint, and if there is a leak, it will produce a soap bubble.

of the line. The air line should be blown out well before it is connected to a pneumatic tool. On most air lines, high-pressure-hose couplings are required. To maintain the hose in proper condition, it should be turned end for end occasionally. All kinks should be avoided, but, when they do occur, they should be carefully untwisted. The hose should be drained and kept on racks in cool, dark storage when not in use.

Counterbalancing of Central Powers

By EMORY KEMLER
Associate Professor of Mechanical Engineering, Purdue University

BECAUSE of their smaller number, stocks of central power replacement parts are smaller than those of pumping equipment, and consequently more difficult to obtain. Therefore, operators must use every effort to see that powers are properly counterbalanced, if downtime and unnecessary use of critical materials are to be avoided.

Proper counterbalancing of pumping equipment is more important under wartime conditions than ever before, because no other item can make such an improvement in extension of service life. It also is more difficult to apply, due to the fact that lease personnel is composed of fewer technically trained supervisors and many more unexperienced layman than usual. This article is the fifth of a series explaining how to counterbalance in simplified language and illustrations especially for the untrained lease pumper.

PROPER counterbalancing of existing central powers will result in much lower loads on the power and will result in longer life and better operation of such equipment. Because of their smaller number, replacement of parts on powers is much more difficult than on pumping equipment since stocks of parts are not so common. If down-time and unnecessary use of critical materials is to be avoided the operator should use every effort to see that powers are properly counterbalanced. The checking of proper counterbalance requires that the wells be weighed at the power. When this has been done an analysis of the counterbalance condition can be made.

The peak load or torque which can be imposed upon a central power can be several times the average load or the load necessary when the power is properly counterbalanced. The problem of determining the location and size of the counterbalance is a complicated procedure. Several methods are available and each does the job in the same general manner. Most of those in use employ graphical methods and require that force diagrams be made. The disadvantages of these methods is that changes in the diagrams are necessary when wells are unhooked or hooked on. The method to be described here uses the same data as the graphical method, but reduces everything to a tabulation basis so that the data can be used for any well combination and the adding or taking off of a well only requires re-adding the data. When a power has a complicated pumping schedule this method will save much time.

The torque on the power caused by any one well at any point will be the component of the rod-line pull at right angles to the crank times the crank arm. Since the ratio of crank radius to pitman length is large the well load can be considered as acting parallel to the zero position, where the crank is in line with the rod line. The torque is then equal to the well load times the sine of the angle between the crank and zero position multiplied by the crank radius.

The method is best explained by following a set of directions in connection with an example. (See article by Hosford and Kemler on "Typical Dynamometer Cards and Their Application," API Proceedings, 1939.) The steps are as follows:

1. Make a polar diagram showing the location of wells from the center of the power and designate one well as zero position such as well No. 2 (See Figure 1).

2. Measure the angles between the zero position and all wells or direction of pull of rod line in a counterclockwise direction. (See Figure 1 and column 2 of Table 1.)

3. Make up skeleton table as shown in Table 1 showing wells, crank position and angle between load direction and crank. These have been listed for each 30° position of crank.

4. Angle between well-load direction and crank as listed in Table 1 is equal

TABLE 1
Torque-Load Calculations

Crank Position	0 Deg.	30 Deg.	60 Deg.	90 Deg.	120 Deg.	150 Deg.
WELL No.	Angle	Angle	Angle	Angle	Angle	Angle
2	0	330	300	270	240	210
9	26	356	326	296	266	236
6	43	13	343	313	283	253
3	55	25	355	325	295	265
4 and 12	60	30	0	330	300	270
5	213	183	153	123	93	63
13	236	206	176	146	116	86
1 and 7	243	213	183	153	123	93
10	273	243	213	183	153	123
11	316	286	256	226	196	166

Crank Position	180 Deg.	210 Deg.	240 Deg.	270 Deg.	300 Deg.	330 Deg.
WELL No.	Angle	Angle	Angle	Angle	Angle	Angle
2	180	150	120	90	60	30
9	206	176	146	116	86	56
6	223	193	163	133	103	73
3	235	205	175	145	115	85
4 and 12	240	210	180	150	120	90
5	33	3	333	303	273	243
13	56	26	356	326	296	266
1 and 7	63	33	3	333	303	273
10	93	63	33	3	333	303
11	136	106	76	46	16	346

In These War Days
WE'RE DRILLING 'EM IN
under Pressure
...and GUIBERSON DRILLING HEADS are Standard Equipment
"We're taking no chances these war days. Can't afford penetration of pay sands by mud and water. Can't afford unnecessary washing, swabbing, and bailing expense. We want production the moment the bit reaches the oil sand. That's why we're drilling in under pressure, using oil and gas or gas alone as the circulating column, and standardizing on the GUIBERSON DRILLING HEAD as our rotating pack-off. Works so well we call it 'Old Faithful.'" Write for particulars or see Page 919 of the Composite Catalog.
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to the initial angle less angle between initial and crank position considered.

5. Lay off angle positions on each dynamometer card as indicated in Figure 2 and read loads corresponding to angles listed in Table 1. (Interpolation will be necessary.)

6. Tabulate these loads under each crank position as indicated in Table 2. (Note that Table 2 contains other data to be discussed later.) These loads are listed for each well (Figure 3 shows the dynamometer cards for all wells on the power).

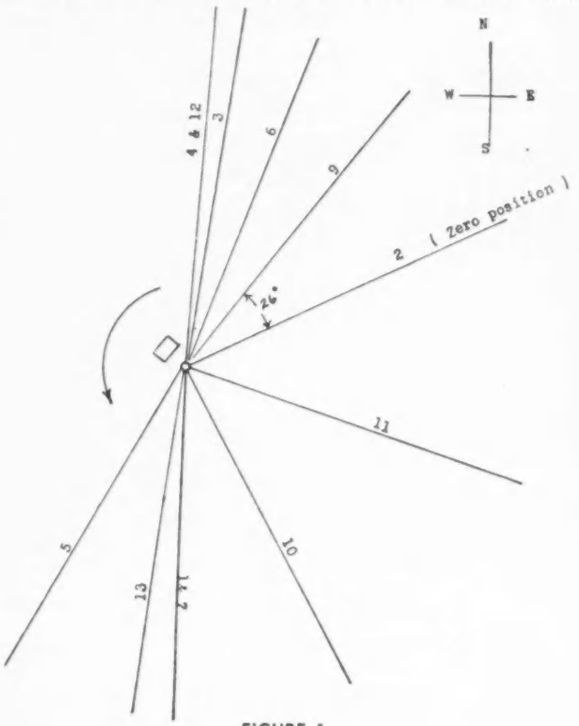


FIGURE 1
Layout of Rod Lines on Power.

7. Multiple-well load (column marked load in Table 2) by the sine of the angle for the corresponding well (column marked angle in Table 2) and by the crank radius (12 inch = 1 foot in this example).

8. Add these torques (column marked torque load) for each crank position and find the resultant torque for each position.

9. Plot polar diagram of torque against crank angle as shown in Figure 4.

10. By trial and error find location and amount of counterbalance which when applied to Figure 4 will give best condition.

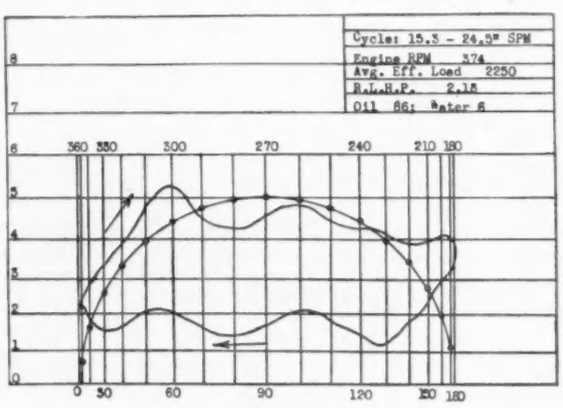
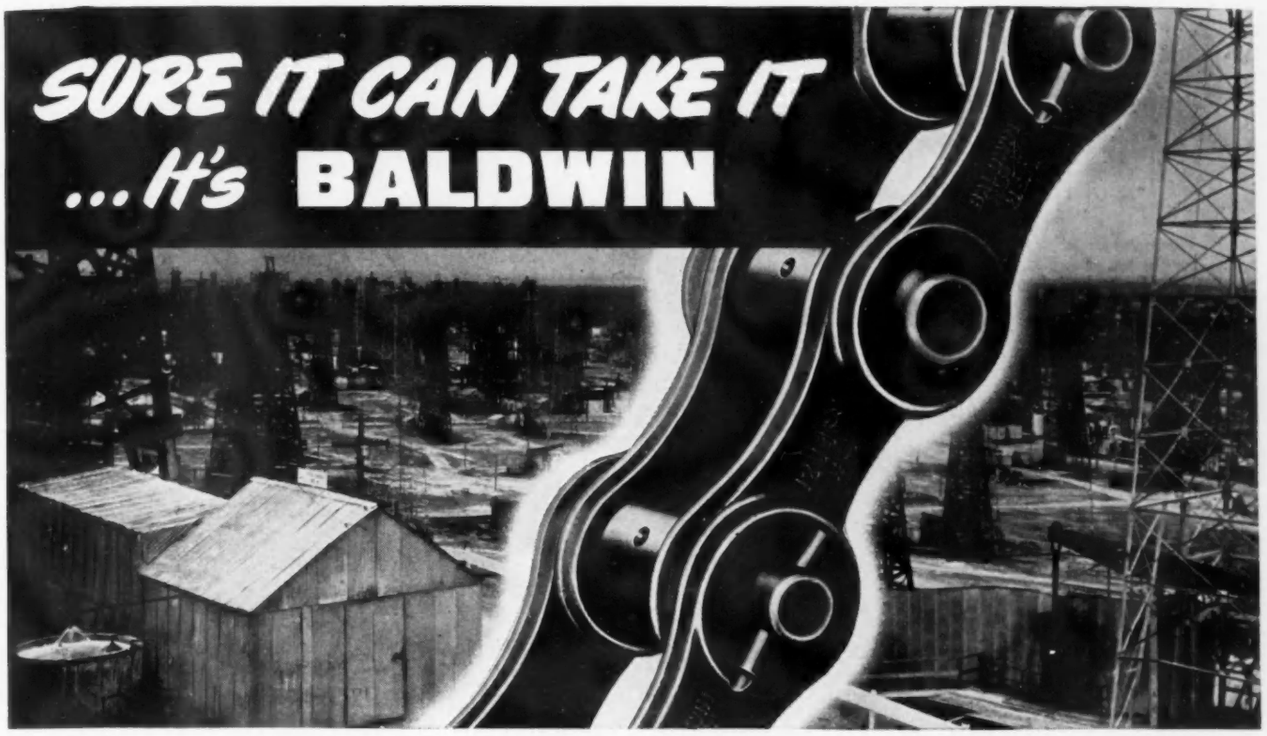


FIGURE 2
Dynamometer Cards Ruled in Crank Angle.

SURE IT CAN TAKE IT ...It's BALDWIN



Year after year, Baldwin Oil Field Chains have proved that they're tough babies—that despite adverse conditions of load, shock or dirt, they can stand up and "take it"—and still come back for more.

There's a reason for this ability—in fact, several reasons. Summed up, they are—better designs—better materials—better methods of manufacture.

Take a look at this Baldwin Master. Note its forged, alloy steel side bars, its externally ground solid rollers, its seamless bushings keyed to the side plate, its pins, with upset heads. The Baldwin Patented Pin Locks are of forged alloy steel.

Then, look at the assembly—staggered to give perfect balance under high speeds and heavy loads.

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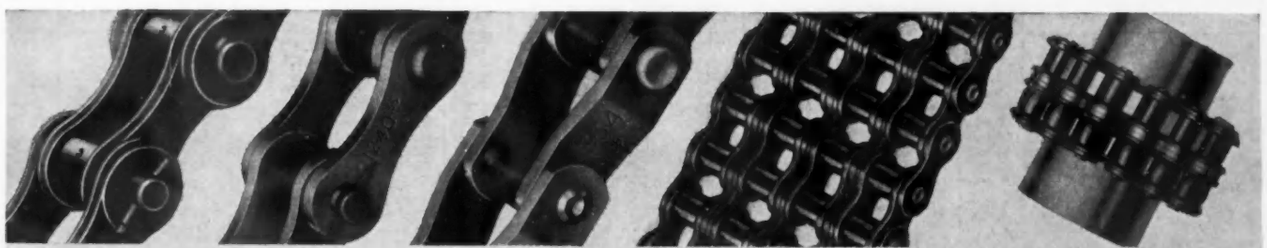

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BALDWIN SUPER SERVICE
1030-SS— 66,000 lbs.
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BALDWIN FULL FLEX
SS-3— 43,000 lbs.
SS-4—100,600 lbs.

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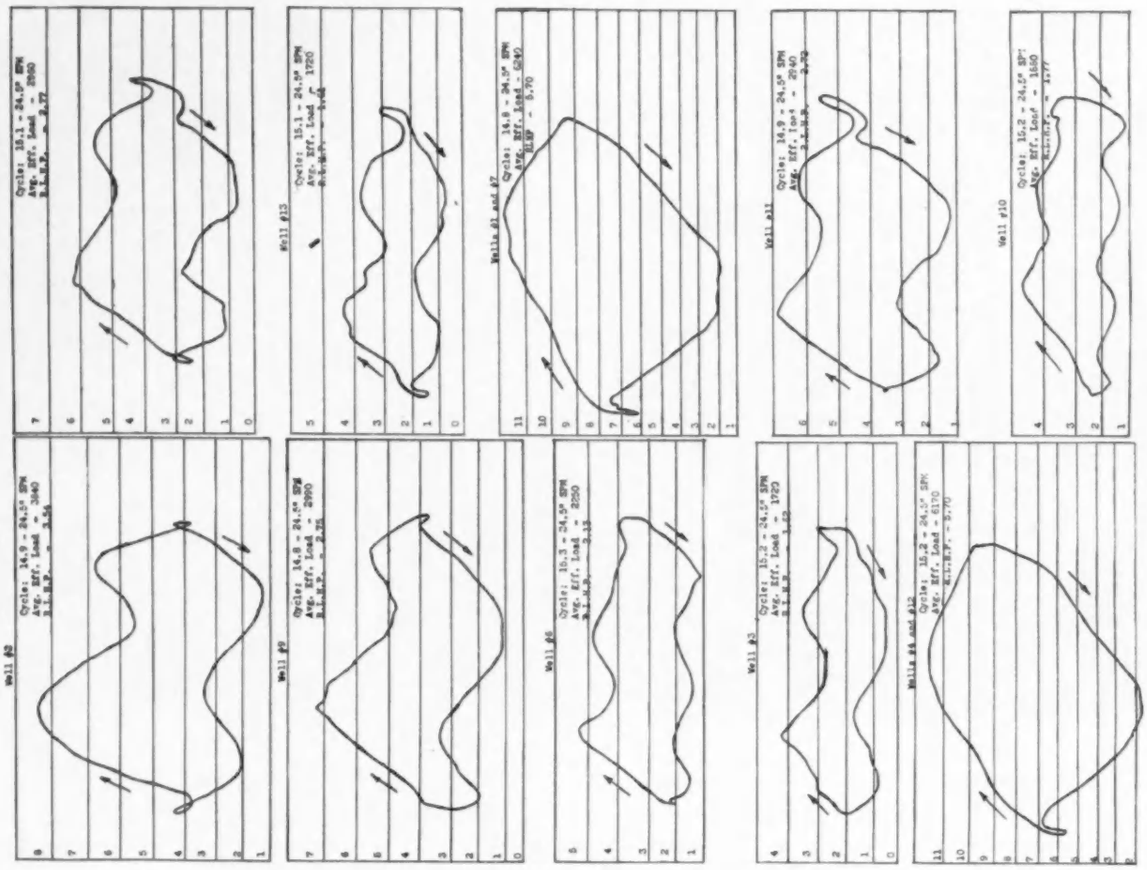


FIGURE 3
Dynamometer Cards on Power.

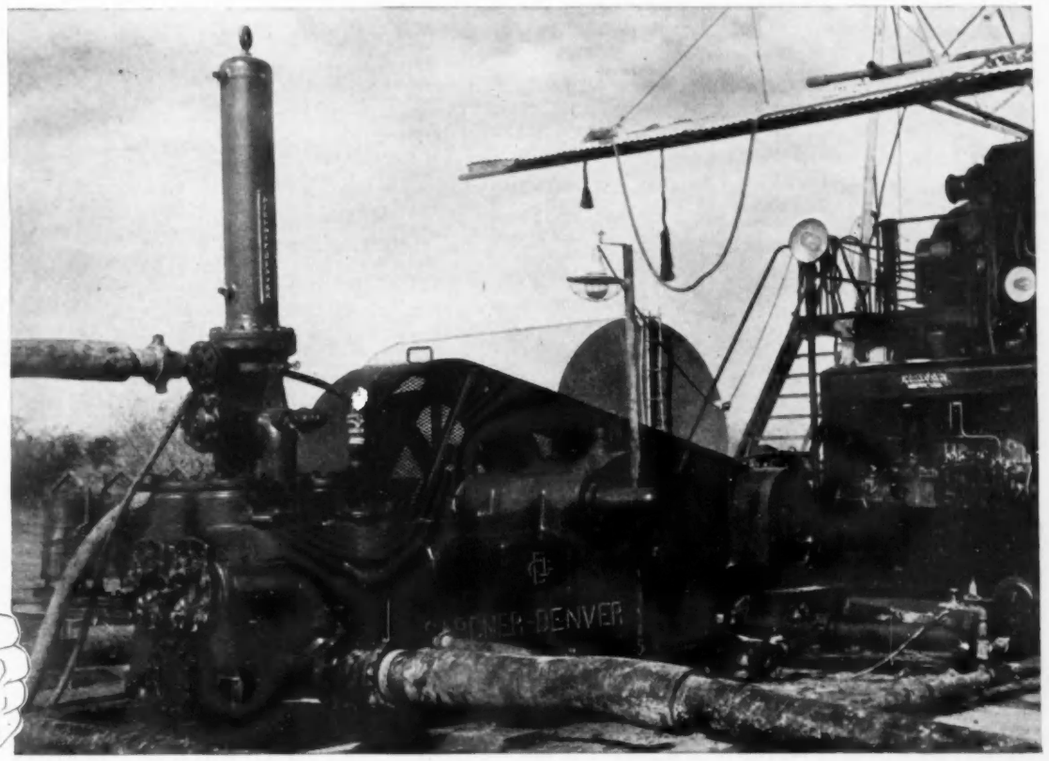
11. When position and magnitude of dummy has been found, supply these data in Table 2 and add result to total without dummy, to find net amount when using dummy.

To illustrate how the numerical calculations are made a few specific values will be worked out. Consider for example well 6 for crank position 30°. The crank position is measured from the zero position of well 2 (See Figure 1). The angle between the crank and the direction of well 6 is determined as follows: The angle between wells 2 and 6 is found from the original layout and

TABLE 2
Torque-Load Calculations

Crank Position	0 Deg.			30 Deg.			60 Deg.			90 Deg.			120 Deg.			150 Deg.		
WELL No.	Load	Angle	Torque Load	Load	Angle	Torque Load	Load	Angle	Torque Load	Load	Angle	Torque Load	Load	Angle	Torque Load	Load	Angle	Torque Load
2	4,400	0	0	4,100	330	2,050	8,000	300	6,800	7,400	270	7,400	6,000	240	5,190	5,800	210	2,900
9	2,100	26	— 930	3,500	356	244	4,500	326	2,520	6,750	296	6,080	5,800	266	5,750	5,200	236	4,310
6	1,950	43	—1,330	2,200	13	— 495	2,750	343	809	4,400	313	3,220	4,200	283	4,090	4,750	253	4,550
3	1,000	55	— 820	1,300	25	— 550	2,000	355	174	3,100	325	1,780	4,100	295	3,710	2,800	265	2,780
4 and 12	3,200	60	—2,770	6,700	30	—3,350	6,400	0	0	8,000	330	4,000	9,750	300	8,440	11,300	270	11,300
5	3,800	213	2,070	4,400	183	231	2,900	153	—1,320	1,800	123	—1,510	900	93	— 894	2,450	63	—2,180
13	3,600	236	2,980	2,500	206	1,100	3,000	176	— 210	2,000	146	—1,120	1,000	116	— 900	1,800	86	—1,780
1 and 7	11,800	243	10,500	10,500	213	5,740	9,500	183	497	7,500	153	—3,410	5,000	123	—4,180	2,000	93	—1,990
10	4,300	273	4,280	4,200	243	3,750	3,700	213	2,020	3,200	183	168	1,100	153	— 500	2,000	123	—1,680
11	5,600	316	3,000	6,300	286	6,060	5,700	256	5,630	5,200	226	3,740	5,000	196	1,380	4,700	166	—1,140
Total			17,880			14,780			16,920			20,348			22,086			17,070
Dummy	7,700	160	—2,650	8,700	130	—6,650	10,200	100	—10,020	11,700	70	—11,000	12,500	40	—8,050	12,800	10	—2,220
Total with Dummy			15,230			8,130			6,900			9,348			14,036			14,850

Crank Position	180 Deg.			210 Deg.			240 Deg.			270 Deg.			300 Deg.			330 Deg.		
WELL No.	Load	Angle	Torque Load	Load	Angle	Torque Load	Load	Angle	Torque Load	Load	Angle	Torque Load	Load	Angle	Torque Load	Load	Angle	Torque Load
2	4,100	180	0	3,000	150	—1,500	1,400	120	—1,210	3,100	90	—3,100	2,400	60	—2,080	3,200	80	—1,600
9	4,800	206	2,100	4,000	176	— 280	3,500	146	—1,960	1,450	116	—1,300	1,600	86	—1,590	3,400	56	—2,840
6	3,800	223	2,600	4,000	193	900	3,000	163	— 875	1,500	133	—1,100	2,000	103	—1,950	1,550	73	—1,490
3	3,000	235	2,460	2,600	205	1,100	3,000	175	— 262	1,500	145	— 860	600	115	— 542	1,000	85	— 990
4 and 12	11,000	240	9,530	10,100	210	5,050	9,000	180	0	7,300	150	—3,650	4,900	120	—4,240	2,000	90	—2,000
5	1,600	33	— 872	2,700	3	— 142	3,600	333	1,640	5,700	303	4,770	5,500	273	5,490	5,400	243	4,820
13	1,100	56	— 913	2,100	26	— 922	1,900	356	133	2,700	326	1,510	4,400	296	3,950	3,100	266	3,090
1 and 7	3,000	63	—2,675	6,500	33	—3,540	6,550	3	— 342	8,500	333	3,860	9,880	303	8,230	11,200	273	11,190
10	1,850	93	—1,840	1,500	63	—1,330	2,100	33	—1,140	2,400	3	— 126	2,900	333	1,320	3,950	303	3,320
11	4,300	136	—2,990	1,350	106	—1,290	2,800	76	—2,720	1,900	46	—1,370	3,000	16	— 828	3,500	346	850
Total			7,400			—1,954			—6,736			—1,366			7,760			14,350
Dummy	12,700	340	4,350	12,500	310	9,500	11,300	280	11,100	9,700	250	9,130	8,200	220	5,270	7,600	190	1,320
Total with Dummy			11,750			7,546			4,364			7,764			13,030			15,670



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GARDNER-DENVER "FX" POWER SLUSH PUMP

TOUGH drilling assignments demand a slush pump that is tough in the vital spots. Gardner-Denver "FX" Power Slush Pumps are designed with many castings of GarDurloy —the stronger, tougher cast iron developed by Gardner-Denver to provide extra ruggedness, extra resistance to shock and abrasion.

Outstanding mechanical features of Gardner-Denver "FX" Power Slush Pumps include:

1. Fluid cylinders, frames, and other parts are sound, strong, wear-resistant castings of GarDurloy.
2. SLUSH-PROOF hardened liners and rods—SLUSH-PROOF Duo-Seat valves.
3. Divided fluid cylinder construction—no inner baffles, or metal sections to be cut through by mud.
4. Positive flood lubrication assures adequate lubrication of all working parts.
5. Oil-stop and mud-stop heads keep mud and water out of power end.

SPECIFICATIONS		
Size	Capacity U. S. Gallons Per Minute	B. H. P.
7¼ x 10	450	100
7¼ x 12	495	150
7¼ x 14	577	200
7¾ x 16	693	250
7¾ x 20	774	425

All sizes may be furnished with reduced sizes of liners and pistons for higher pressures.

For complete specifications, write Gardner-Denver Company, Quincy, Illinois • Dallas • Houston Tulsa • St. Louis • Los Angeles • San Francisco • New York • Chicago • Pittsburgh • Continental Supply Co., Continental Building, Dallas, Texas • Republic Supply Company (of California), 2122 East 7th Street, Los Angeles, California.

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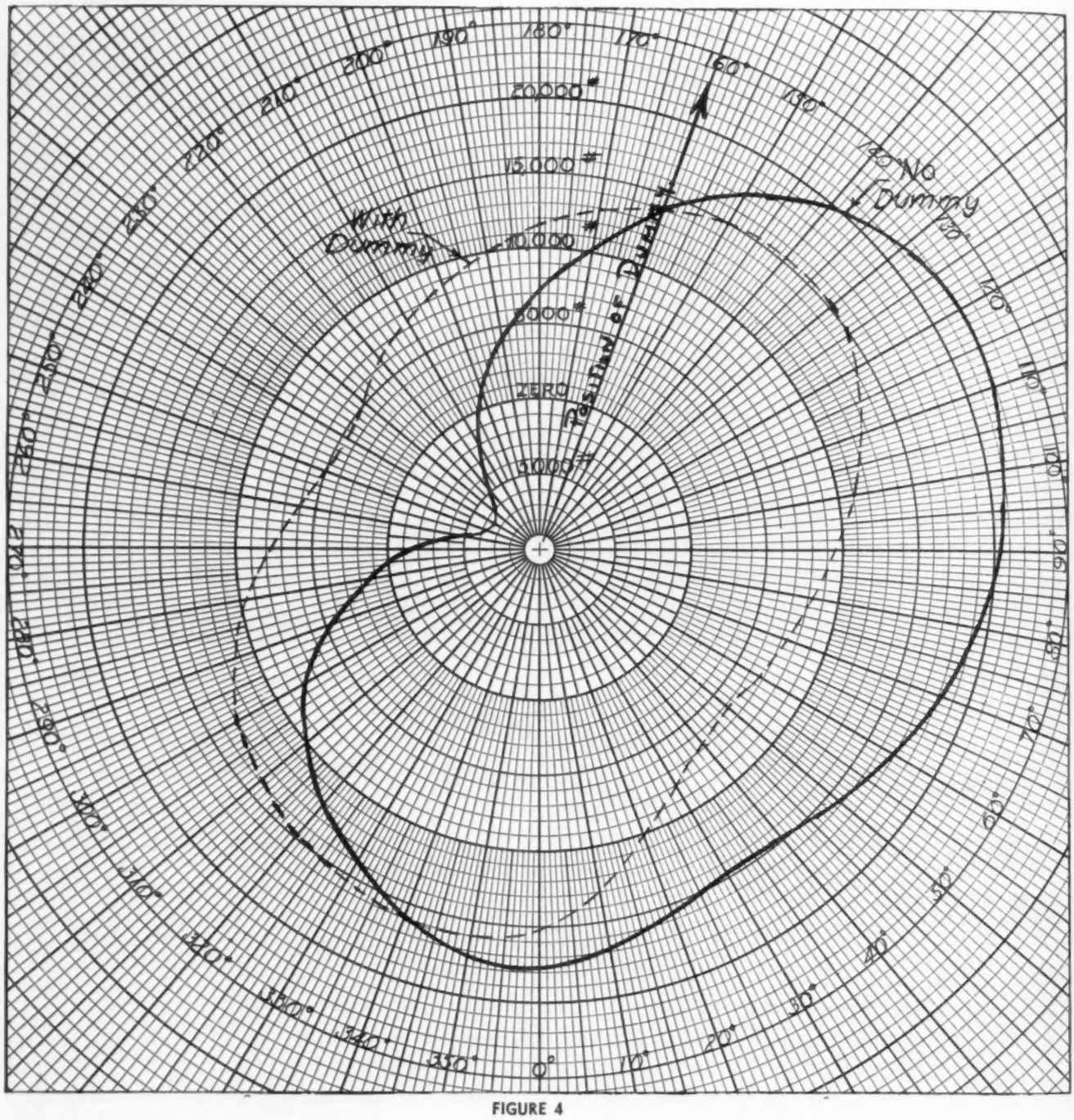

FIGURE 4

tabulated in Tables 1 and 2 as 43°. The angle between the crank and rod line to well 6 is then 43 — 30 = 13°. The well load for the 30° position of the crank occurs just before the end of the downstroke. The angle positions corresponding to dynamometer card positions for this well are as shown in Figure 2. The angle positions are laid out on the basis of simple harmonic motion. The scale of angles can either be laid off using values of sine or graphically as indicated in Figure 2. The 13° position corresponds to about a 2200-pound load. The torque will be given by —2200 pounds × sin 13° × 1 foot = 495 feet pounds. Other torque values are found in a similar manner. The torque values as set up in this table have been taken as negative for Θ less than 180° since for these values the rod lines are pulling the power. This condition could have been cared for by changing the angular notation in which case the negative sign would automatically be introduced.

Once the torque values have been calculated the torque position curve shown in Figure 4 can be drawn. Where a high and low value occur nearly opposite as at the 240—70° position a dummy can be used to advantage. Since the torque is caused by a load at right angles to the crank the dummy is set perpendicular to the direction required to push out the low and pull in the high value which in this case is 160° from the direction of well 2, measured in a counterclockwise direction.

If some wells are only pumped part time a different dummy may be required to balance the power for that condition. The net torque with wells hooked off can be found by adding up the values given in Table 2, omitting those wells now hooked off. Another chart using the revised values will show the size and location of the new dummy. Where repeated calculations are necessary this method will save much time. The results are in a very convenient form to file for future use and if there is not much change in well loads some of the data can be used in future calculations.

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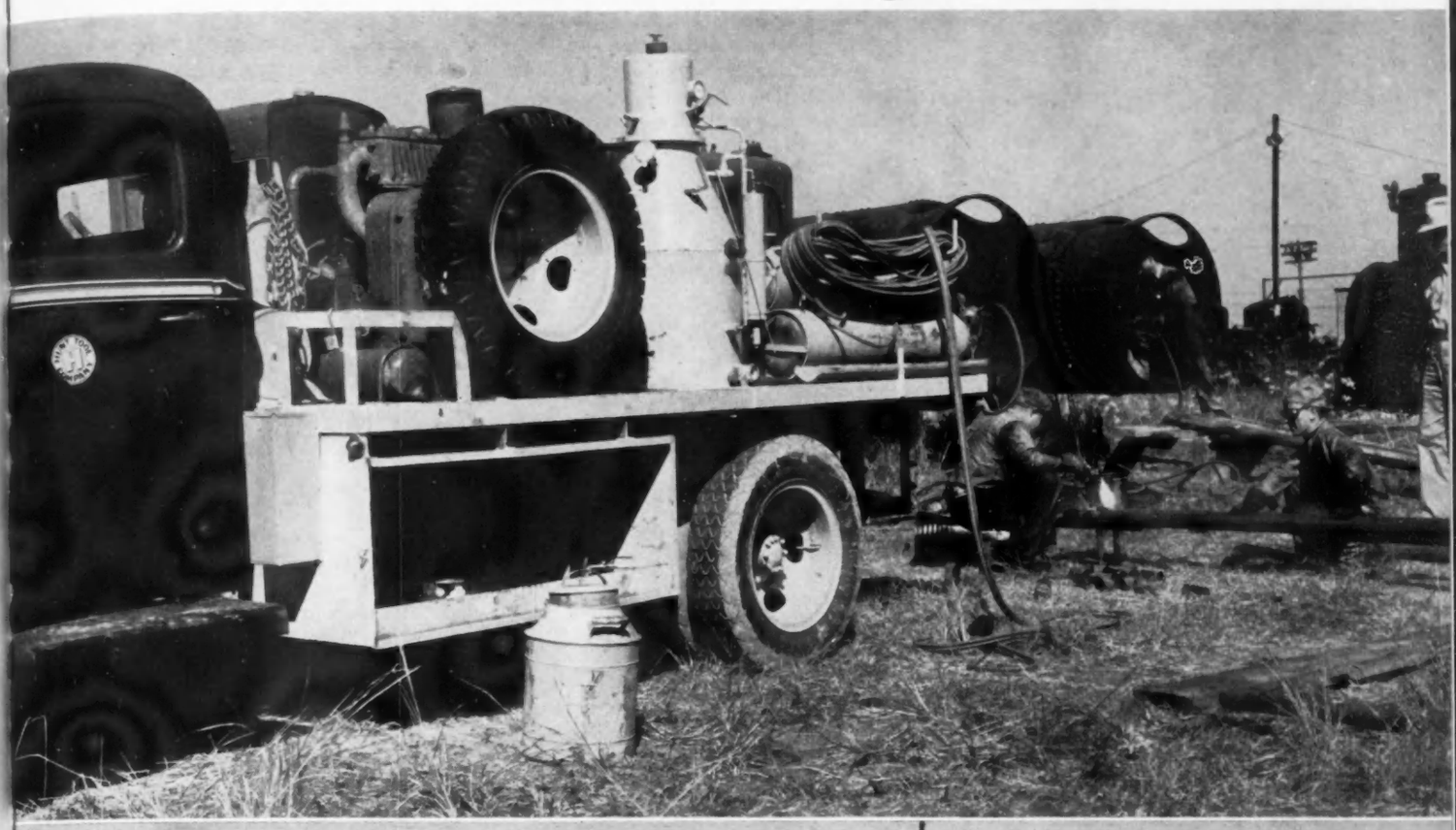

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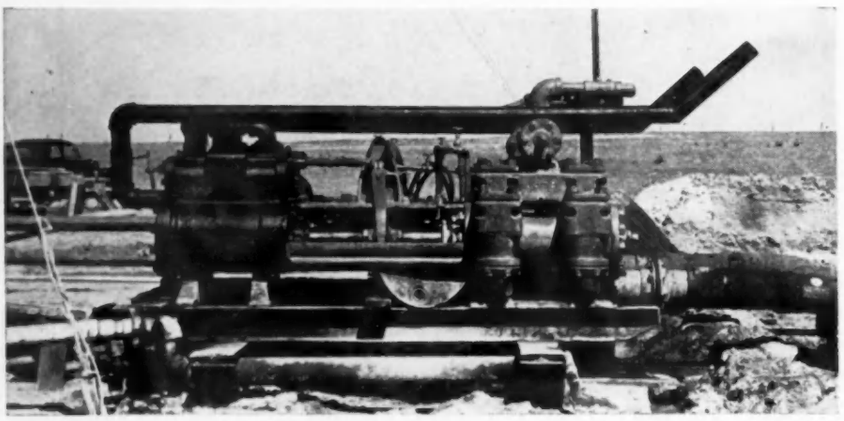
PRACTICAL OPERATING *Hints* FOR

1. MUD PUMPS

Unitized Exhausts Simplify Unit Set-up



Built-in reverse bend and mud-pit delivery nozzles permit compact arrangement of piping with elimination of need for dismantling when pump is transferred to new location.

A COMPLETELY unitized mud-pump assembly, in which is incorporated an integral, overhead exhaust steam line, eliminates much pipe work and simplifies the moving chore for the company devising it.

Although not adaptable to all types of steam-powered slush pumps, for those on which it may be applied it offers the following advantages:

It is integral with the pumps, eliminating the need for dismantling during moves.

It is overhead—completely out of the way.

It exhausts into the air and over the mud pit, thus practically eliminating the possibility of a crew member being scalded by hot water which may have condensed in the unit during a down period.

Being directed into the air and away from the rig it provides substantial noise reduction.

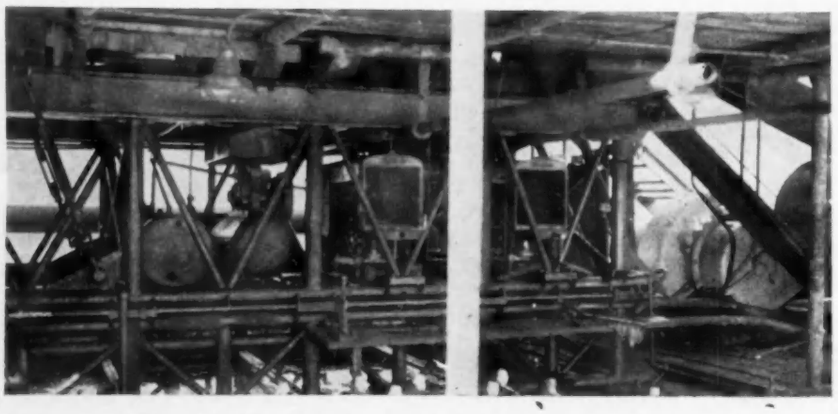
The unit shown in the photograph is an experimental set-up, subsequent exhausts being fabricated with long, sweep bends and welded joints in place of the screwed fittings shown.

2. AUXILIARIES

Substructure Mount Protects Rig Units

MOUNTING of all auxiliary engines and power plants is the substructure frame results in saving considerable time and effort. As shown, two engines running the power plant and small unitized air compressor were mounted transverse to the length of the substructure unit on a flooring laid between the two substructure units. When the derrick and equipment are to be moved, it is necessary only to break down piping and pull the entire unit up on the truck bed. Eyes in the ends of the skid bases of the substructure make the moving process easy.

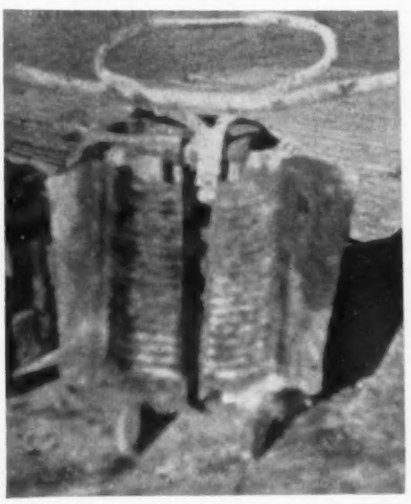
The under-floor units were amply protected from drippings by sheeting placed immediately overhead. The small electrically driven compressor unit with its exposed V-belts was further protected by a sheet iron hood directly above it. Water for the radiators of the power plant engines is piped to a fitting immediately above the radiator filler neck, and the various fuel lines and regulators are all mounted permanently with the units. Handy unions just outside the substructure permit speedy disconnecting when the equipment is moved. Little or no trouble is experienced with overheating of the engines in this confined location. Ordinarily in the summer months the space under the derrick is shady and cooled by a strong draft sweeping through the structure.



Arrangement of elevated working platform on skids carried between derrick base piers sets engines close to point of use and eliminates need for additional shelter.

3. SAFETY

Transverse Steel Bar Prevents Slip Loss



Providing third dimension greater than table opening safeguards against milling jobs.

WITH new men making up a part of nearly every drilling crew, and forming the majority of many, any change in equipment which can in part overcome this handicap deserves consideration.

One drilling company, faced with loss of slips through the rotary table and

THE DRILLING RIG

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

down the hole, avoided both tool loss and the time expended in tedious milling out of the "fish" by having welded across the handle of the rotary slips a short section of heavy sucker rod. The safety strip, welded at right angles to the handle or grips, is made long enough to bridge the aperture in the rotary table and thus to cause a slip to hang up within reach of the crew should it get away from the man charged with handling it.

The strip should be of length sufficient that the shortest dimension across the tee formed by it, the grip and the slip is greater than the diameter of the rotary table hole without bushings.

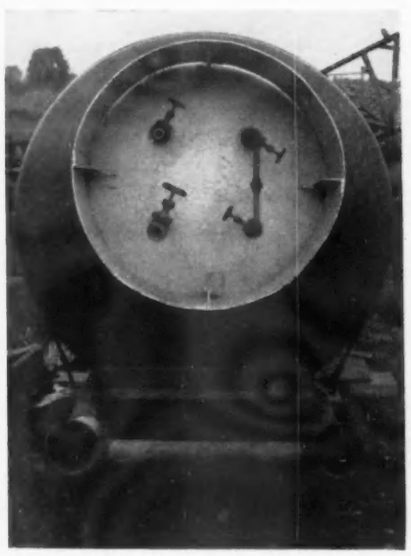
4. FUEL SUPPLY

Guard Ring Protects Butane Tank Valves

VALVES set into the end of the butane supply tank on mechanical rigs using this fuel are exposed to breakage when the tanks are shifted, and if broken off, may result in serious loss or even disastrous fire damage.

To protect valves against this hazard, one contractor equips his tanks with a ring of light tank steel, welded to the end of the tank in several spots but spaced from the tank sufficiently to permit any drip to be dissipated without forming an explosion hazard.

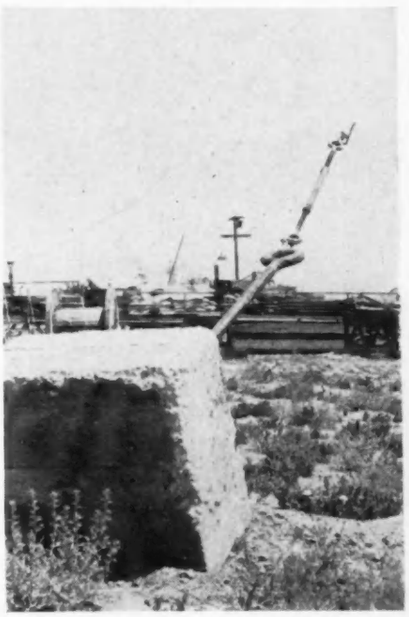
Such a ring may also be made to serve as carrier for the hose through which the fuel is transferred to the tanks on the engines, it being possible to coil the hose within the ring and around the valves in such a way that it may be transported without danger of damage.



Exposed connections on skid-mounted unit carried within welded-on shielding flange.

5. RIGGING UP

Precast Anchorage Saves Lease Chore



Heavy concrete block with sturdy eye bolt for guy connection saves excavation.

TO ELIMINATE the pouring of concrete anchor blocks at each drilling site, with consequent chore of breaking up and carting away when the lease is put in shape, one contractor utilizes precast concrete anchors in which have been incorporated heavy eye bolts to which the guys may be attached.

The anchor block is trucked to the desired point, unloaded and pivoted until the bolt lies in the plane of the guy. Ordinarily the mere weight of the block on the soil is sufficient to hold it in place, but it may be buried to any extent desired, if heavy thrusts on the derrick are anticipated. Where loose, dry soil is present, an excavation may be made in advance of unloading the block, and the unit then set in place and dirt tamped around it. Where ample water, at high pressures, is available, a hydraulic jet may be used to advantage in settling the unit.

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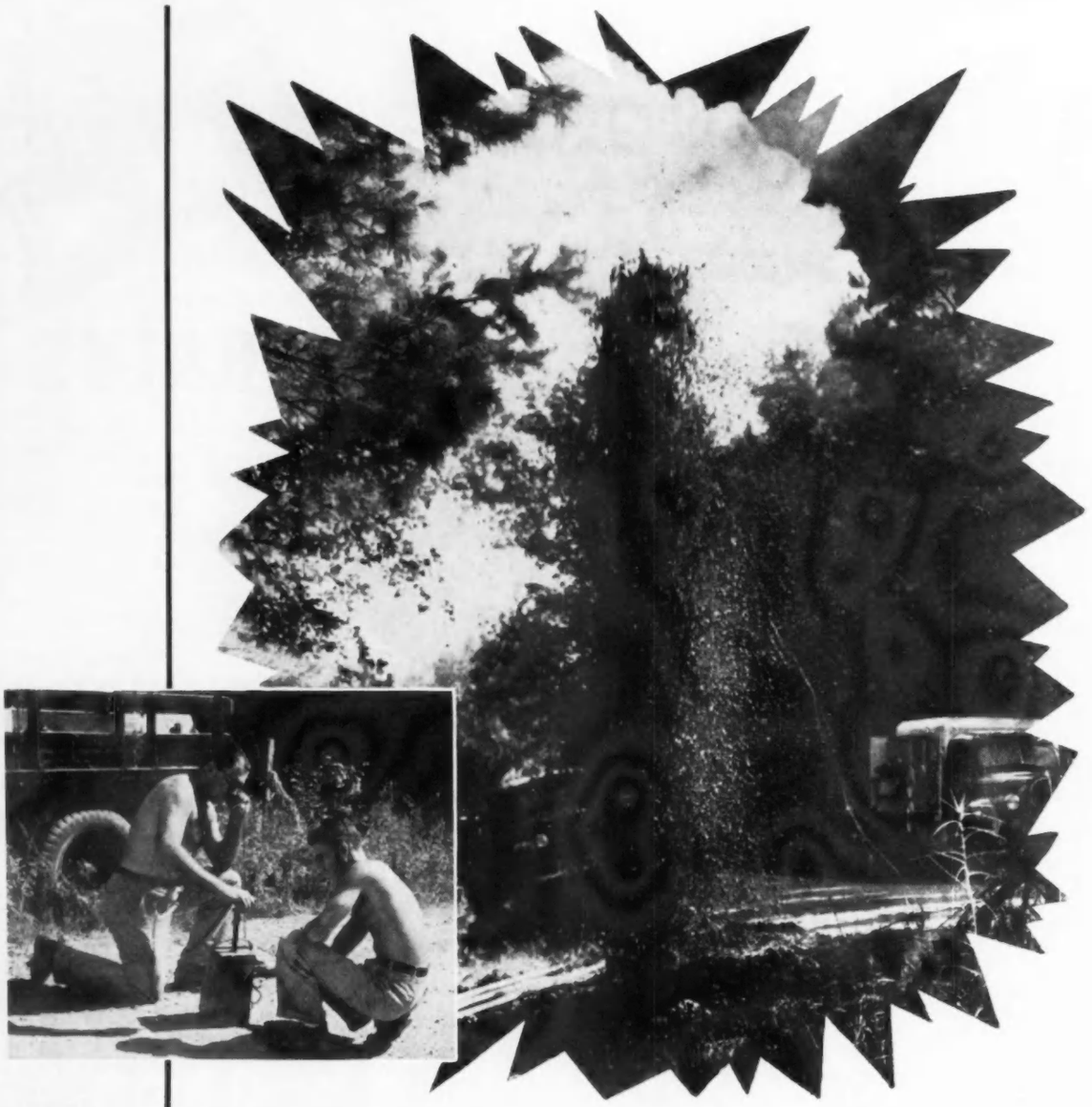
If you want to buy or sell equipment, be sure to see the Trading Post Section on page 61.



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POINTING THE WAY

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Companies to Convert Holdings in Venezuela to New Petroleum Law

Length of contracts to be extended; titles to be cleared, but royalty and rentals will be increased very materially

IMPORTANT changes in the financial aspects of Venezuelan oil operations are now in immediate prospect. They point to higher royalties and other costs of operations there.

In April of this year the Venezuelan government will offer to the congress of that country a new petroleum law of far-reaching effect, and right now the prospects are that most of the oil companies operating in Venezuela will convert their present lease and operations contracts (known as concessions) to the new law.

For the past few months constant negotiations have been under way between the Venezuelan government and the oil companies. The United States State Department has had some hand in the matter as well.

Actually, what has happened is that the oil companies have the choice of converting their present lease contracts in Venezuela to the provisions of the new proposed law, or take their chances in a wide variety of aspects. Most of them appear to prefer conversion. What this means, in briefest terms, is that in return for an extension of lease contracts for another 40 years, and for the automatic clearance of any title difficulties, the oil companies are agreeing to pay substantially higher royalties and rentals. It means they are giving up such protection as they may have had under their original contracts with the Venezuelan government, for a newer set, and the verbal assurance as given by the president of Venezuela, that the new order does not simply mean a precedent of reopening the contracts at will on the part of the Venezuelan government, but settles certain matters which gave promise of disturbed relations between the government and the oil companies.

Oil has played a real part in Venezuelan economy, and due in large part to it Venezuela has had a bigger budget than almost any other South American country. The government budgets its revenue at from $100,000,000 to $120,000,000, and of this amount $35,000,000 to $40,000,000 has been forthcoming from its interests in oil. Total expenditures of oil companies in Venezuela, including royalty, will run approximately at $70,000,000 annually. The new law will increase the royalty by substantial sums in normal times.

As the Venezuelan government owns the subsoil rights, there has been a noticeable inclination to increase the government's returns on concessions during the past several years. In fact, in contemplation of a new policy, or because of reluctance of oil companies to take out new lease agreements under proposed terms during the past few years, there have been no new concessions granted, although there has been some trading in old concessions or lease agreements. The various exploration taxes and initial development taxes, which could be changed by law, also have shown a strong tendency to climb during the past few years.

In discussing the matter, the oil companies prefer to deal with the facts of the new and old agreements, although it is well known that the falling off of exports from Venezuela came coincidentally with increased pressure on the part of the Venezuelan government for greater share in the oil produced there.

What the Changes Are

Under the old contracts with the then Venezuelan government, royalty ranged from 7½ percent to as high as 15 percent. Interior contracts generally had the lower rate originally. During the past 15 years practically all contracts granted called for 10 to 15 percent. Under the new law, royalties will be uniform at 16⅔ percent, or one-sixth, at the wells. If the royalty is taken in kind, the companies get paid to transport the oil at tariffs to be determined by the government. If paid for in cash the royalty will have charged against it transportation costs back to the well. It is understood that a value of 90 cents per barrel is the present basis of royalties in cash.

Under the old law rentals were charged on the land held under contract by the oil companies, regardless of whether or not production was developed on the holdings. These rentals have been substantially increased, as follows: old contracts two bolivars (about 70 cents U. S.) per hectare per year for first three years; four bolivars per hectare per year for next 27 years; five bolivars per hectare per year for last 10 years of concession. The new terms provide for five bolivars per hectare per year for the first 10 years; thereafter increase in five-year stages to 30 bolivars per hectare per year. However, royalty payments may be credited against surface rentals above five bolivars per hectare. Oil companies may continue to turn in blocks of undeveloped hectarage in 500-hectare blocks, provided the blocks are same as included in original contract; in other words, no regrouping is allowed. Royalty credits may apply against all of a company's leases with the provision already indicated.

In the past import duties (which are very high in Venezuela) were exempted on certain things destined to be used in the development of most properties. This has been a source of considerable difficulty in the past as the government has time and again sought to apply import duties against equipment and materials formerly allowed to come in free. Due to the nature of Venezuelan law under which a court precedent has no standing, this has meant almost continual arguments and lawsuits. This problem was solved by elimination of the tariff exoneration clause which means that import duties will be charged in the future although the government can make exceptions if it sees fit. (It is anticipated that such exceptions will be granted in the case of refinery equipment as Venezuela is anxious to build up her refining capacity.)

This clause conceivably could make a substantial difference in the manner in which supplies will be sold in Venezuela.

In the matter of employment of nationals by oil companies operating in Venezuela no change was made. Venezuelan laws already provided that 85 percent of the total employes of a company operating there must be nationals of Venezuela.

A part of the new law gives the government the right to legislate or make rules for the prevention of waste, a new thing, although it is not anticipated that difficulty will arise from it as, generally speaking, Venezuelan properties are being operated with a very high degree of technical skill and efficiency, with a minimum of waste.

The new law seeks to expand the refining capacity of the nation, and it is understood that Standard Oil Company of Venezuela will increase its present plant capacity in Eastern Venezuela and that Shell will likewise increase. However, this is not mandatory except that as additional crude-charging capacities of refineries in the Carribean area handling Venezuelan oil (now at Curacoa and Aruba) are built, they shall be built in Venezuela. This will not affect additional capacity for finishing.

Under the new law trunk pipe lines become common carriers. Government oil is to be carried at a cost of not more than 4.14 cents per 100 miles per barrel. Water rates are the same as pipe-line rates, and in figuring water transportation hypothetical pipe lines will be laid across water as if across land and similar rates imposed. Minister of Fomento will determine the tariffs for private transportation. This common-carrier aspect of the new law will prove a boon to some companies with production and no pipe-line outlet, notably Socony-Vacuum Oil Company.

Although it is not mentioned in the new law, it is contemplated that the government will repeal over-time port work fees which have made possible many unfair impositions, buoy taxes and other burdensome impositions.

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Expect Order Giving PAW Control Of Material Distribution

PAW Curbs Drilling in Two Texas Areas Because Outlets Filled

Military Plans Seen as Boosting Demand Above Capacity

Controversy Over Second Carrier To East Coast Becomes Heated

By B. F. LINZ
Washington Correspondent

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A WARNING that the stepping up of Allied Nations' military activities, apparently now close at hand, will tax the capacity of the oil industry to the limit, two PAW orders and prospects of a new material distribution plan, which were seen as indicating a selective basis for allocating limited critical materials to drilling operations may be adopted, controversy over the route of the proposed 20-inch products line to the East Coast, and arrival in the East of the first oil shipped through the big-inch pipe line, were the outstanding oil developments in Washington last week.

The warning that the country may face a supply emergency far more critical than any it went through the past winter was voiced by PAW officials appearing recently before a House appropriations sub-committee, whose testimony was made public during the week. If plans for European and Asiatic military operations should use petroleum in proportion to the rate it is now being consumed in North Africa, it was stated that such an increase in oil consumption would result as to make prospects of having an adequate supply very grave.

This somber outlook for the future was disclosed during a hearing on a deficiency appropriation in which PAW sought an additional $685,000 to finance the increased responsibilities laid upon the organization by President Roosevelt's executive order of December 2. This order replaced OPC with PAW.

PAW officials for some time have talked publicly about the probable necessity of adopting some form of selective drilling as a means of getting the most good out of the limited quantity of critical materials available to the industry, and last week issued two orders of this nature. One stopped all drilling for gas in the Texas Panhandle, where available pipe lines are loaded to capacity. The other order substituted 160-acre spacing in place of the standard 40-acre spacing provided for by M-68 for the Barnhart, Texas, field, which has limited pipe-line facilities. The orders were seen as forerunners of similar regulations restricting drilling of wells in areas where conditions indicated they would not be of immediate help to the war effort.

Imminent as the week came to a close was a new P-98-c order designed to be the basis for a new control of materials distribution in the oil industry, under which PAW would take over some 90 percent of the authority now exercised by WPB. This would further strengthen PAW control of drilling, making it possible to promulgate selective-drilling programs on a wide scale.

The fight over the proposed products line from Texas to Mt. Vernon, Indiana, wound up behind locked doors February 26, when the general committees from Districts 1, 2 and 3, officials of War Emergency Pipeline, Inc., members of pipe line committees and PAW officials met in a final effort to decide whether the projected Southwestern leg or the Eastern leg should be built first.

Increased delivery of petroleum to the East is anticipated, now that the big-inch pipe line is operating as far as Norris City, Illinois. The first trainloads of oil delivered by the 24-inch pipe line to Norris City began arriving in the East last week. At a press conference, Ickes said that the putting of the big-inch into service was expected to boost Eastern rail receipts above 900,000 barrels daily when operations reach capacity. This will be due to shorter rail hauls. This enlarged delivery rate should aid in building up stocks this summer against next winter's needs.

Meanwhile, a special Senate oil committee submitted another report, which was pessimistic as to the outlook for Eastern supplies, fearing that military needs would offset enlarged deliveries. The report stated lack of coordination between federal agencies was interferring with the solving of the problem, and recommended that Ickes be given more authority and that the whole oil-rationing program be revamped to insure elimination of hardships, which the committee said had been experienced in New England this winter.

The Eastern situation eased somewhat last week, with surprisingly light drain on stocks during the recent cold spell. Rail deliveries to the East Coast during the week ended February 20 averaged 820,553 barrels daily, an increase of 13,567 barrels over the previous week, of which shipment in drums accounted for 24,039 barrels, a gain of 5326 barrels.

Ickes' press conference also brought out that the Florida pipe line is expected to begin operations within a few days, with commitments already made for 30,000 barrels of gasoline a day. This is close to the 35,000-barrel capacity of the line.

However, Ickes declared that enlarged deliveries to the East Coast did not presage either a return of gasoline coupons to their original value of four gallons or a relaxation of the ban on pleasure driving. "Until storage is filled we won't even consider gasoline for pleasure purposes," he stated.

New Orders Indicate Drilling Equipment May Be Allocated on Selective Basis

Indications that allocation of materials for the drilling of wells soon will be put on a selective basis, with the possible contribution of the proposed well or wells to the war needs as the determining factor, were seen as being likely last week.

PAW during the week ordered that drilling in the Barnhart, Texas, field henceforth be conducted on a 160-acre pattern instead of the 40 acres provided for in general conservation Order M-68, and stopped the drilling for gas in the Texas Panhandle. In both instances, lack of adequate pipe line outlets and need for careful distribution of the limited amount of critical materials was the reason given.

The Barnhart and Panhandle orders were interpreted in many quarters as being the forerunners of similar regulations limiting wells to wider spacing or even complete stoppage of drilling in areas where transportation outlets, types of oil and other conditions indicate the production of a region is not likely to contribute to the success of the war effort. For sometime, PAW officials have been talking publicly about the probable necessity of adopting some selective basis for the allocation of limited critical materials, and now it appears they are taking actual steps in that direction.

With available pipe lines loaded to capacity, PAW on February 24 banned further additions to the more than 1700 natural gas wells now producing in the Texas Panhandle field.

The order prohibits the use of any materials to drill, complete or provide additions to any well in any discovered or undiscovered natural gas field in Carson, Collingsworth, Gray, Hansfield, Hartley, Hutchinson, Moore, Potter, Sherman or Wheeler counties.

However, it was ruled, exceptions may

be issued in meritorious cases, and applications to use material may be filed with the natural gas and natural gasoline division of PAW in Washington.

PAW officials said the restriction would not materially affect operations in the Barnhart field, since most operators on their own account have limited drilling to 1 well per 160 acres. The productive horizon of the field is found at approximately 9200 feet.

It was explained by Deputy Administrator Ralph K. Davies that the field is located in an area "where substantial excess of efficient production capacity already exists which cannot be utilized because of limited transportation facilities."

"This order," he said, "will permit sufficient drilling to outline the field and prove the extent of the reserves, so that the field can be more fully developed when and if necessary to the prosecution of the war.

"With the limited amount of critical materials available for productive purposes, we must direct the use of these materials to develop and produce oil at places where transportation facilities and other conditions are favorable for maximum utilization for the war program in terms of critical materials expended."

The order permits the drilling and completing of only 1 well in a quarter section, to be located within 150 feet of the center of the southeast quarter of the quarter section, and all property interests in the quarter section must be consolidated before the well is drilled.

PAW to Push Program For 4500 Wildcats

A program for the drilling of 4500 wildcat wells this year will be laid down this week by PAW, seeking an increase of nearly 50 percent over the number of exploratory shafts sunk in any previous year.

All companies will be called upon carefully to review their holdings and to develop those showing definite possibilities.

PAW officials said the new program will necessitate discovery of more fields of the non-structural type, which it is admitted will require more drilling than for test of structural type areas.

To make the ambitious wildcatting program possible, PAW will take steps to make the necessary material available.

Texas City Butadiene Plant Construction Halted

WPB reported February 25 that during the week ended February 19, a petroleum construction project with an estimated cost of $1,500,000 was halted under the policy of curtailing construction not directly related to the war effort.

A spokesman for the board said the project was a butane plant to be built at Texas City, Texas, by Pan-American Refining Corporation. Construction was stopped through the revocation of preference ratings at the recommendation of the petroleum administrator who said he had been informed that butadiene to be produced by the plant would not be required under the changed synthetic-rubber program.

Meeting Growing War Demands Strain On United States Petroleum Reserves

If the President's program for European and Asiatic military operations "takes place on the scale he announced the other day, and if that increased scale of operations uses petroleum products in proportion to the rate which they are now being used in North Africa . . . very grave doubts will arise as to whether this country, from its domestic sources of petroleum production, will be able to meet requirements." This was the warning of Robert E. Allen, PAW's assistant deputy administrator, gave to the House Appropriations Committee in seeking an additional $685,000 for PAW work.

Because of the possibility that the United States reserves will be strained by military operations, Allen pointed out that "We must, as part of our operations, study and survey the alternative of using the petroleum resources of the entire world. This brought on a comprehensive review of the world's oil situation for the benefit of the committee, with Allen and other PAW officials engaging.

On a crude-oil basis, Allen said, the United States will provide something over 4,000,000 barrels a day against a 5,500,000-barrel total from all Allied Nations. Russia will furnish a large part of that produced outside the United States. There is little room for much of an increase, but a possible 300,000 to 400,000 barrels a day may be obtained from Texas. Increased demands for California oil will top the state's producing ability within the next seven months, predicted E. DeGolyer, another assistant deputy administrator for PAW.

Turning to outside sources, DeGolyer explained that there is a production of about 45,000 barrels a day from the Near East, with a possible additional 30,000 barrels if the Tripoli leg of the Iraq pipe line, cut with the fall of France, is restored. Russian oil losses have been small, only the Maikop field having been occupied, and it is expected to be rehabilitated now that the Soviets have recaptured it. Russian production, DeGolyer said, runs around 200,000,000 barrels yearly.

No information is available regarding Germany's oil situation, DeGolyer told the committee in answer to questions. The chief source of supply is the Roumanian fields, producing a little over 100,000 barrels a day, he said, with possibly 5000 or 10,000 barrels from Austria and Hungary, a similar amount from Poland, and maybe 5000 barrels from Germany. "But the bulk or the greater portion of their supply of motor spirit is made from the hydrogenation of coal, and as to the extent of that we don't have knowledge," he pointed out. "The Japanese have something over 100,000 barrels a day of oil supply in the Dutch East Indies and Borneo."

So far as German stocks when she started the war, Assistant Deputy Administrator Bruce K. Brown said, "our information" is that "she would have run out a year or two ago" of the reserve supply which had been laid up.

"That might indicate the responsibility for Germany's recent failure in Russia was due to the lack of oil," Cannon commented. "Does your information corroborate that conclusion?"

"I believe that is correct," Brown replied, going into further detail off the record.

Brown reported that the necessary authorization to complete the full high-octane-gasoline program has been given by WPB, and two thirds of the indicated requirements is in course of construction.

An aviation-gasoline capacity of 200,000 barrels will be achieved this spring, Allen said, but the current goal is far in excess of that figure and the sights are being raised repeatedly so that "we are conducting a stern chase."

Expect Order Giving PAW More Control Over Distribution of Materials

An order giving PAW full control over the distribution of materials, both new and used, in the oil industry is to be issued this week by the WPB as the basis for a broad materials redistribution program to be initiated later this month.

The order will prohibit any operator in the United States, its territories or possessions, or Canada from carrying more than a 90-day supply of materials, and the term materials will be defined to cover both new and used products and to include equipment and facilities without limitation.

The new P-98-C will override all other inventory control provisions now in effect, in both the priorities and controlled materials plan regulations.

When the redistribution program is inaugurated every operator will be required to participate and those who fail to do so will be deprived of priorities assistance.

Under PAW materials redistribution program, no operators who have surplus material which they have not made available for redistribution will be able to secure priorities. Under the new set-up, every operator will be assigned a serial number without which he will be unable to deal with other operators either to dispose of or acquire materials and will be unable to secure priority assistance. Materials for use both in the United States and abroad will be covered by the order. Transfer of material to foreign countries or Canada from operators, and stock in the United States is to be accounted for in a form PD-470 to be filed with the PAW.

Senate Committee Suggests PAW Should Have Power to "Decide and Enforce"

Lack of coordination among the federal agencies interested in oil, and deficiencies in the administration of rationing continue to interfere with the solving of the problem of supply, the Senate was told February 22 in a report by its special oil committee headed by Senator Francis Maloney of Connecticut.

Summarizing the results of a series of hearings held during January, the committee foresaw little improvement in the over-all picture, not only this year but during coming wartime winters, and admitted it was unable to offer any comprehensive program beyond emphasizing that the steps taken and contemplated by PAW and other agencies should be pressed.

Still further authority, substituting the "vital power to make final decisions and to enforce them in the various agencies" for the persuasion to which he now is limited, was urged for the petroleum administrator, with WPB to reconcile differences which may arise between the oil program and some other program as a result of PAW directives.

Also badly needed, it was declared, is better planning and cooperation on the part of the military authorities, lack of which caused a severe crisis last December when the military found it necessary to demand large quantities of oil for use in north Africa.

"At the present time arrangements are being worked out whereby Army and Navy officers will work closely with the petroleum industry and the PAW," the report explained. "Active cooperation between these authorities is essential, with the military making every effort to advise civilian authorities of its needs reasonably far in advance. Actual military needs for battle operations must come first; but, on the other hand, complete disruption of civilian transportation, or recurring periods in which households are unheated, would produce a situation at home which would impair the war effort as seriously as a military defeat."

Much of the hardship suffered by fuel-oil consumers, the committee held, results from a price structure "which discouraged the production, transportation and accumulation of fuel oil in the places where it was most seriously needed," but its previous recommendation for improvement of the price situation was not directly renewed.

Recommendations

Among the necessities of the situation, as seen by the committee are:

A proper balance between the quantities of fuel oil and gasoline production;

The pooling of oil for transportation, discontinuing the present practice of specifically earmarked individual shipments by companies to specific consumers;

Greater use of tankers to supply the East Coast;

Increased use of barges;

Greater ingenuity to utilize makeshifts, such as the use of box cars for the movement of oil in drums.

Better utilization of existing tank trucks.

Investigation of possible methods of transportation which might consume less steel than pipe lines.

The committee was outspoken in its criticism of rationing methods, declaring that fuel-oil rationing should be simplified and much wider discretion given local ration boards and kerosine and range oil should not be rationed at all.

Pointing out that little can be done to ease the situation this winter, the report recommended that for the next heating season serious consideration should be given to a straight-line percentage cut based on use during the 1941-42 season with provision for local boards to grant relief in hardship cases.

Kerosine and range oil, used primarily by poor persons "who are not addicted to waste and who have not the funds to insulate their homes," should not be rationed, it being maintained that much hardship was caused this season by the bogging down of rationing.

With respect to gasoline rationing, however, the committee held the system should be tightened on the East Coast, to eliminate black markets, but nationwide gasoline rationing for the purpose of conserving rubber should be put on the basis of mileage with due weight given to the availability of rubber to the particular driver and his individual needs.

Restrictions on the use of gasoline by trucks should be made as light as possible in the case of farmers, but the committee felt that some types of trucking operations might be eliminated to save tires.

PAW Asks $685,000 More For Operating Expenses

Expansion of the petroleum coordinator's office into the Petroleum Administration for War will increase the cost of operating the government's oil-control agency during the current fiscal year by $685,000, it was disclosed February 24 when an appropriation of that amount was recommended to the House by its appropriations committee.

The additional sum to be provided represents a little more than 20 percent of the $3,365,000 originally provided for the current year, which ends next June 30.

Testimony taken by a subcommittee during consideration of the bill showed that the increased responsibilities of PAW will require a total staff of 1641 persons by the end of the fiscal year, compared with an estimated average of 990 originally anticipated for the coordinator's office.

About half of the additional money will be required to carry on the work imposed on PAW by the African campaign, it was disclosed by Assistant Deputy Administrator Robert E. Allen. The remainder is necessary for the additional responsibilities imposed on the agency by the President's order of December 2, an outline of which by J. Howard Marshall, chief counsel, drew from Chairman Cannon the comment that "in other words, you have set up a complete dictatorship, with complete and supreme authority in one head, in oil and petroleum products, just as you have in rubber."

"That is correct," Marshall replied, "although we endeavor to dictate as little as possible."

IPA Counsel Blasts OPA Oil Price Position

A demand that the new Price Administrator, former Senator Prentiss M. Brown, streamline procedure and personnel devoted to oil prices was made last week by Russell B. Brown, general counsel of the Independent Petroleum Association.

In a letter to the administrator, Brown pointed out that one of the major problems confronting OPA is that of crude oil prices, a decision on which "may depend the day upon which the present war will be terminated," and declared that "after observation for more than a year I have come to the conclusion that it would be difficult for anyone to successfully operate OPA with relation to petroleum until some who have stood in the way of sound administration have been removed from places of responsibility."

In outspoken terms, Brown asserted that "the section handling petroleum prices is inept and unsound.

"I do not mean by that all who work in this department are either inept or dishonest," he explained, "but I do mean that the conclusions and results are unsound and unsafe. The organization of the work, the procedure adopted for consideration of problems that come before them precludes them from having the full facts on which to base sound conclusions.

"The fatuous juvenilities that are constantly budding out of the office through the mail and through the press have been discouraging to many persons. All that has prevented serious consequences has been that most have failed to treat them as expressions from their government but rather as hasty, immature statements from some temporarily occupying positions in the government.

"It is now recognized by the entire petroleum industry that we face a probability of a shortage of crude oil in the near future. This view is shared by many in government. It is generally recognized that one of the principal factors leading to the shortage is the position of OPA on the question of petroleum prices. This position has prevented proper search for new discoveries and has so discouraged those now producing as to cause great loss of important reserves already discovered. Saboteurs of industry should not be given places in government from which high perch they may launch their assaults against earnest people who form a part of our industrial army so greatly needed now.

"I do not believe you would want this situation to continue. I believe it will continue unless some drastic changes are made in the procedure and personnel. The procedure adopted and the treatment accorded these important questions are not in harmony with the law creating the Price Administration and has gone far to interfere with its successful operation and is often actually intellectually dishonest."

Radical Changes in Fuel Rationing Proposed

Indicating that radical changes may be made in the rationing of fuel oil next winter, Joel Dean, director of the OPA fuel rationing division, will meet with his industry advisory council March 16 and 17, to consider the rationing program to date and discuss ideas and suggestions for revision which have so far been received.

"We already have a great many suggestions for careful consideration," Dean said, "but their discussion has been put off at the request from oil industry executives that no drastic changes be made during the current heating year."

The industry advisory council is composed of representatives of the petroleum, oil burner, heating and plumbing and insulation industries, and the medical profession.

Fuel-oil rationing officers of all the regional offices together with various state and district representatives, have been called to Washington to meet next week on the rationing program.

At least two amendments to the ration order will be issued within the next two weeks, Dean disclosed, but no indication of their nature was given. It was reported, however, that OPA is pressing for another cut in the value of fuel-oil coupons, although it was said the supply situation does not warrant such a step, to impress the public with the fact that the shortage is not an ephemeral situation.

Allocating Oil to Plants In District 2

In a move to keep refineries in District 2 operating at efficient levels of production of military and civilian products, a "kitty" is being setup, whereby approximately four percent of all oil run from leases producing 2000 barrels or more daily will be earmarked for delivery to refining plants which cannot secure an adequate supply of crude from their usual sources.

Approximately 40,000 barrels daily will be put in the kitty for allocation among refiners, whose eligibility will be determined on the basis of their war products, transportation facilities, etc.

Bureau of Mines Seeks More Funds for War Work

Bureau of Mines appropriations for oil investigations during the current fiscal year will be increased by $81,000 approved February 24 by the House Appropriations Committee to enable the bureau to carry out studies asked by PAW.

Appearing before the committee, Director R. R. Sayers explained that five projects are under way, as follows:

To evaluate crude oil for the components most suitable for 100-octane gasoline and for other war material, to cost $25,000 of the amount requested;

To conduct thermodynamic and experimental laboratory studies of the conversion of butane to butadiene, as a step in the development of a "one-step" method, to cost $32,000;

To determine the components and quantity of extractable hydrocarbon mixtures in fields of the condensate type, to cost $16,000;

To survey Mid-Continent oil fields and recommend the application of practical secondary-recovery operations, including the repair of wells, to cost $5,000; and

To stimulate production of Pennsylvania-grade crude oil, to cost $3,000.

The inquiries have been undertaken, Sayers explained, because "urgent and changing war needs within the past six months have made it imperative for PAW to broaden greatly" the scope of its work. So far, he said, most of the $225,000 originally appropriated for the bureau's oil and gas investigations has been spent on this work.

"When the United States entered the war 100-octane was approximately maximum quality of aviation gasoline," he said. "Now it is becoming the minimum for combat planes, with the top yet unknown. Translation of this dynamic improvement in aviation fuel into production in volumes not dreamed of before the war is demanding the utmost from petroleum technologists. Crude oils containing good aviation-base stocks are not plentiful and the manufacture of blending agents that increase the anti-knock rating requires a large expenditure of money and critical material. In addition to these components of aviation fuel, it is necessary to add agents to give the proper volatility and tetraethyl lead to increase the anti-knock rating still further.

"The most advantageous blends of the different components and the most effective uses of the various available materials can be determined only by a large program of selection of crude oils, distillation to obtain their aviation gasoline cuts, blending in various combinations and proportions, and testing with laboratory equipment and special engines. To gain the broad picture, which involves geographical as well as technical elements, it is necessary to have a comprehensive and coordinated program conducted by a governmental agency. As the bureau had trained personnel and equipment for such work, it was asked to handle the program."

Industry Launches Drive To Conserve Rubber

A concerted oil-industry drive to protect the rubber on the nation's automobiles was launched by the Petroleum Industry War Council February 23, with the approval of Administrator Harold L. Ickes.

Announcing the industry's plans, William R. Boyd, Jr., chairman of the council, explained that thousands of service stations will be enlisted to promote a program of regular tire inspections, lower car speeds and proper tire care, and each company will use all of its current advertising media to promote the program.

The plan was adopted following release of reports by Rubber Director William M. Jeffers that the current year will be the most critical one in the history of automotive transportation, with the civilian population dependent entirely on reclaimed rubber pending development of the synthetic program to a point where the supply will provide a surplus above military requirements.

Committees Hold Debates On 20-inch Products Line

Industry representatives from Districts 1, 2 and 3 and PAW officials held a lengthy and at times heated meeting February 26 to decide whether the proposed 20-inch products line shall be built first from the Southwest to Indiana or from the Middlewest to the East Coast.

The session was called by Administrator Ickes after the Truman Committee investigating the war effort held a hearing in line with complaints in the Senate that the building of a pipe line to the Middle West, which the government would dispose of after the war, would give major companies a dominant position in that area.

Although Ickes had approved the construction of the southwestern leg of the line and had secured WPB authorization for the materials and the RFC had agreed to finance the project, the hearing developed that the District 2 committee was not in agreement and believed that the line should be built from the Middle West to the East Coast to be supplied by oil coming to its western terminus by other pipe lines, by barges and by rail.

At a press conference February 25, Ickes indicated he was not irrevocably committed to the building of the southwestern section first and that if the industry decided that the eastern half would be more efficient, he would ask to have the RFC committment and WPB authorizations shifted.

The controversy over the project brought sharp criticism from eastern areas which have been looking to the new pipe lines for relief from the present shortage.

In a formal statement officials of the American Automobile Association charged that political pressure engineered by oil business rivalries was its basis and declared, "this is not the time for arguments over location of the pipe line."

U. S. Buys 154-Mile Refugio-Pierce Junction Line

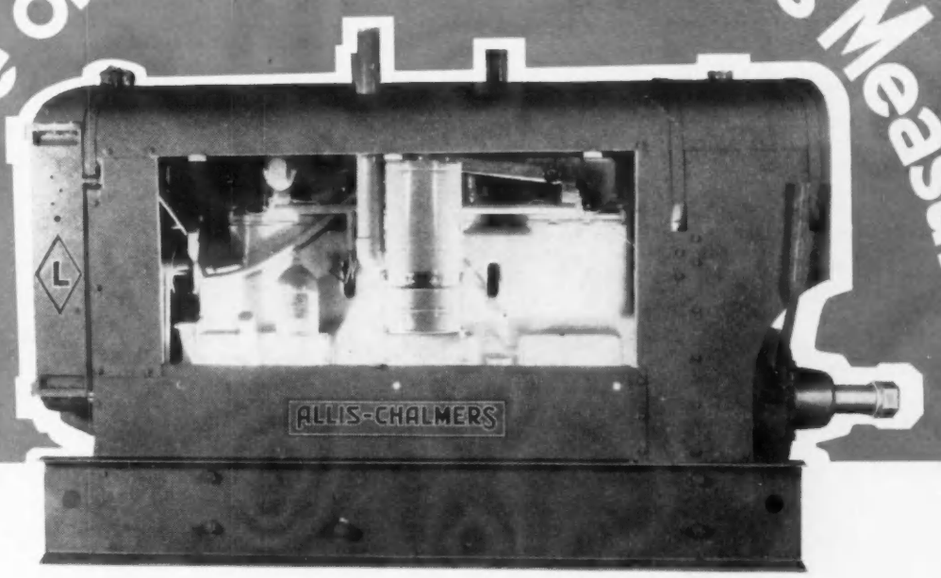
Plans to convert the 154-mile Houston Gulf Gas Company pipe line from Refugio to Pierce Junction, Texas, from a natural-gas line to an oil line to connect lines between Corpus Christi and Longview and become part of the system supplying the big-inch were disclosed February 24 when Secretary of Commerce Jesse Jones announced that the line would be purchased by the government.

The line, composed of 14- and 16-inch pipe, will be acquired by Defense Plant Corporation at a cost of approximately $2,625,000. The project was recommended by PAW.

District 3 Facilities Committee Appointed

Use of facilities in District 3 have been made as follows: Chase E. Sutton, Pure Oil Company, Houston, Texas, chairman; Major B. A. Hardy, Louisiana, Minaral Board, Shreveport, Louisiana; George A. Hill, Jr., Houston Oil Company, Houston; Dr. F. H. Lahee,

The Value of an Oil Field Engine is Measured-



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Sun Oil Company, Dallas; I. M. Martin, Lion Oil Refining Company, Eldorado, Arkansas; J. H. Russell, Gulf Oil Corporation, Houston; C. G. Staley, proration umpire, Hobbs, New Mexico; and John R. Suman, Humble Oil & Refining Company, Houston.

Study groups are to be appointed to conduct reclamation studies in the various areas throughout the six Gulf Coast states, similar to those being conducted by similar subcommittees in the other districts. The object of the studies will be to determine what materials now in use can be reclaimed in an emergency from existing facilities and wells of low productivity; and made available for new development and for maintenance and repair operation on wells having greater productive value.

PAW Forms Foreign Oil Committee

Formation of a foreign petroleum committee, composed of representatives of the federal agencies having an interest in foreign oil matters, was announced by PAW February 26. Following a meeting of government representatives February 25, at which the broad objectives of the committee were discussed, Deputy Administrator Davies extended invitations to serve on the committee to: Dr. Herbert Feis, advisor of international economic affairs, State Department; Robert P. Patterson, under Secretary of War; James E. Forrestal, under Secretary of the Navy; Milo Perkins, executive director, Board of Economic Warfare; E. R. Stettinus, Jr., Lend-Lease Administrator; Admiral Emery S. Land, chairman of the War Shipping Administration; and Nelson A. Rockefeller, coordinator of Inter-American Affairs. The principal function of the committee will be to determine how the United States can best direct its petroleum supplying efforts in relationship with probable theaters of war.

Charge "Conspiracy" Halts Grain Alcohol Plants

A suggestion that there may be a "conspiracy" in the chemicals branch of WPB to prevent the building of any more alcohol plants was voiced February 25 by Paul Hadlick, counsel for the Senate agriculture subcommittee investigating the rubber program.

Hadlick expressed his opinion during a hearing at which testimony was introduced that the department of agriculture favored the building of alcohol plants at points throughout the country where surplus stocks of grains were available.

Senator Guy M. Gillette of Iowa, chairman of the subcommittee, expressed agreement that WPB has been "successful" in discovering obstacles to the program and that confusion and differences of opinion exist as to the need for additional plants.

"The committee," he said, "has been advised on one hand that we have ample supplies of alcohol. Other authorities maintain that if the synthetic-rubber program is expanded they don't know where we are going to get the alcohol."

Quebracho Can Be Obtained Upon Request

Operators requiring quebracho and other extracts for drilling purposes will be given permission to use the two tanning agents upon applications for relief from the restriction imposed February 4, it was announced by WPB February 26.

Appeals of operators for relief from the order should be filed by letter in triplicate with the Leather and Sole Branch of WPB in Washington.

OPA Fixes Prices for Diesel Oil at Gulf Points

Maximum prices for distillate diesel oil of 28 degrees API and above have been set by the OPA for Mobile, Alabama, and three Florida ports, at 4.625 cents per gallon for Mobile and 4.75 cents per gallon for Pensacola, Panama City and Port St. Joe, effective March 1.

The prices were fixed to cover barge rates averaging 25 cents per barrel to Florida and 20 cents to Mobile, plus terminaling charges of 10 cents per barrel which, it was said, distributors cannot absorb at present prices.

Utilities Materials Governed by New Board

Basic orders governing the flow of material in to the entire utilities field were issued February 24 by the new Office of War Utilities recently created in the War Production Board.

Important provisions of the order designed to effect sharing of material and equipment in the inventories of natural gas and other utilities organizations, requires them to sell surplus stocks as a condition for continuing to receive priority assistance, such redistribution will be carried on through regional surplus stock offices to be set up throughout the country next month.

High ratings are given to permit utilities to obtain materials for maintenance, repair and minor constructions, but stocks of controlled material held for use in construction will be limited to those needed for the ensuing 60 days.

Standard of California Plans Plant Expansion

Jesse Jones, secretary of commerce, announced February 26 that a contract had been executed with Standard Oil Company of California to provide plant facilities in that state at a cost of approximately $6,200,000, title to which will remain in Defense Plant Corporation to be operated for the government by the company.

Adequate Heat Exchangers Assured by WPB

Adequate supplies of heat exchangers for aviation gasoline, synthetic rubber and other operations using such equipment were assured by WPB February 22, in an announcement that in spite of the large backlog of orders the industry will be able to complete all demands made upon it during 1943.

More than $200,000,000 worth of heat exchangers is to be produced this year by an industry which in pre-war years was of small size and in 1941 had a production of only $65,000,000.

Production of Elk Hills Shallow Oil Planned

Arrangements whereby Standard Oil Company of California will produce 15,000 barrels of oil daily for five years from the shallow zone in the Elk Hills reserve after which the field will be shut in if the current emergency has ended, are said to have been completed following the consummation of an agreement for the merging of properties in the reserve, some 8300 acres of which formerly were held by the company.

Operations are to be confined to the eastern part of the structure, estimated to obtain 300,000,000 barrels of oil after having produced nearly half that amount.

Plan Plant to Improve Gasoline Performance

Approval for construction of a large unit employing cycloversion, the newly announced catalytic process for the production of aviation gasoline, has been granted Phillips Petroleum Company, by PAW.

This announcement was made by Frank Phillips, chairman of the company. "This new cycloversion unit," said Phillips, "will convert automobile gasolines or other petroleum distillates into products which when blended with other components, will impart greatly improved flight performance to finished aviation fuels."

Capacity and location of the new catalytic cracking unit were not announced, but it was understood that the plant will be a substantial addition to the nation's aviation gasoline program.

Changes Made in ODT Petroleum Personnel

A number of changes in the personnel of the ODT Division of Petroleum and other liquids were announced by Director Joseph B. Eastman February 19 in a streamlining of the office to deal with increasingly critical wartime problems.

Fayette B. Dow will continue as director of the division, but the tank car service section is reorganized and Porter L. Howard of Sun Oil Company, Philadelphia, will direct it as an associate director of the division and assistant to Dow.

Robert W. Shields, formerly chief of the pipe line section, will also become an associate director, in charge of pipe lines, and A. V. Bourque, chief of the tank car service section, will become associate director in charge of that section. Harry R. Lewis, formerly president of the Harry R. Lewis Company, Warren, Penn., has been appointed assistant to the director and E. G. Waring, Washington, D. C., released to the

Official U. S. Navy Photograph

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ODT by the War Department will be assistant to Bourque. G. E. Everett, formerly with the American Petroleum Institute and the Western Petroleum Refiner's Association, will be chief of the petroleum unit of the tank car service section, with H. P. Ross, formerly with Cities Service Oil Company and David H. Rotroff, railroad man, as his assistant.

Auden A. Dibble, formerly ICC engineer in the valuation of pipe lines, was appointed chief of the pipe line section.

Eastman also announced the appointment of three regional managers for the tank car service section, who will issue permits for short-haul movements within their territories, R. A. Green, with offices in New York; Eugene Jackson, at San Francisco, and John W. Painter, at Houston, Texas. Painter was for some years in charge of tank car operation for The Texas Company and later for Sims Oil Company and Deep Water Refining Company.

New Tanker Rates Fixed by WSA

New voyage charter rates for gasoline and kerosine from California to British Columbia have been fixed by the War Shipping Administration at 28.5 cents per barrel and 28 percent from the Los Angeles area; 26 cents and 27 percent from Port San Luis, and 23 cents and 29 percent from San Francisco.

New rates and surcharges also have been set on bulk tanker shipments of crude and products from Gulf ports, Los Angeles and San Francisco to Central America and the Panama Canal Zone.

From the Gulf, rates range from 26.5 to 49.5 cents per barrel, with surcharges ranging from 241 to 355 percent; while from the Pacific Coast the rates range from 43.5 to 79 cents per barrel, with surcharges running from 31 to 38 percent.

On benzol in bulk, the commission established a rate of 27 cents a barrel, plus a surcharge of 103 percent, on shipments from Atlantic to Gulf ports, and 27 cents per barrel and a surcharge of 21 percent between Pacific ports.

California Assembly Resolution Ask Price Raise

California's state legislature is backing up the demand of that state's oil producers and refiners for price increases. An assembly interim committee, following studies of the situation, has strongly urged immediate action by Washington; and a resolution embodying its recommendations has been transmitted to Administrator Harold L. Ickes, the price control authorities and to all members of the California congressional delegation.

The resolution, pointing to a critical shortage of producing capacity and reserves that are vitally necessary to the conduct of military and war industrial operations, sets forth that demands will continue to increase; that while costs have been greatly increased during the past 18 months no compensating rise in prices has been permitted; and that producers cannot be expected to find the needed new supplies unless allowed prices for their products that will assure return of the capital outlays such undertakings will involve.

District 3 Committee Urge Building Line to Serve Gulf Coast Refineries

The General Committee of District Three, PAW, urged immediate work on construction of the new 20-inch products pipe line from the Texas Gulf Coast to Seymour, Indiana, in resolutions passed at a meeting in Houston February 24.

Although the project already has approval of PAW and WPB, a group of Western refiners opposed construction and asked that a line from the Mid-West to the East Coast be built instead.

Already the big-inch, starting at Longview, is moving oil from Texas to Norris City, Illinois. The first delivery was made February 19 when 60,000 barrels flowed through the 24-inch line. The volume will be stepped up to approximately 300,000 barrels within the next few weeks.

It was the plan of the industry, PAW and WPB to parallel the big-inch with the 20-inch products line, since around 50 percent of critical petroleum war products are refined on the Texas Coast, until opposition to the project was raised.

The General Committee of District Three, before being called to Washington for a conference February 26 with Petroleum Administrator Ickes and PAW officials, adopted the following resolutions, giving the reasons for construction of the 20-inch products line from the Gulf Coast to Seymour, Indiana:

"The most important and conclusive argument for building the 20-inch pipe line from the Texas Gulf Coast to Norris City and Seymour is that such a line is required in order to provide sufficient outlet for refineries making over 50 percent of all the critical petroleum war products for our military forces.

"In a very real sense this line is a matter of military importance, and failure to construct it will endanger seriously the output of aviation gasoline, toluene, military lubricants, and other products required by the Army and Navy. Even if construction of the line proposed by District 2 from St. Louis to the East Coast involved a slight transportation advantage, which is the maximum claimed for it, that still would not be sufficient justification for changing the line if by so doing there resulted a sacrifice of output in critical war products.

"District 2 refineries produced less than one-third as much critical petroleum war products as the Gulf Coast refineries, and the assurance of increased transportation for them is of no advantage from a military standpoint. It would simply mean that they would continue to run more crude than in normal times, whereas Gulf Coast refineries would be handicapped, as they have been for the past several months, by inadequate transportation.

"Such a situation would be intolerable in view of the fact that Gulf Coast refineries are undergoing a tremendous expansion for the production of critical war products, including synthetic rubber components, and must be assured a substantially larger outlet later this year.

"If there is any conflict between the production of critical war products and increased deliveries into District 1, it must be clearly settled in favor of the production of war products. Furthermore, careful analysis indicates that proceeding with the 20-inch product line already approved by PAW and WPB from the Gulf Coast to Norris City and Seymour is not only the most desirable from the standpoint of war products but also from the standpoint of increased deliveries to District 1. This is indicated in the following analysis.

"1. The project was proposed by PAW and approved by WPB as 'the surest, most economical in terms of material and manpower, and the most dependable method for meeting military and essential civilian requirements during the winter of 1943-44.'

"2. The route selected by PAW was chosen after consideration of several alternatives. It was recommended in preference to a line through Monroe, Louisiana, Nashville, Tennessee, and Danbury, Kentucky, because it would: (1) save critical materials by using the tank farms and tank car loading racks of the 24-inch line at Norris City and Seymour; (2) be completed sooner; (3) provide a two-day better turnaround on tank car deliveries to the East Coast; (4) cost less to construct and operate.

"3. Any proposal to build the line over another route, or to build the Eastern section from St. Louis to New York first, endangers the entire project. Delay or failure to construct the approved line will constitute a threat to military supplies required on the East Coast and to adequate supplies for heating on the East Coast next winter. Such failure would represent a severe indictment of the industry.

"4. The proposal that the line be built from St. Louis to New York assumes that 55,000 barrels daily will be supplied by barge from the Helena line. This would mean that deliveries to District 1 would be less by this amount than if the approved PAW project is built. Furthermore, in its report of December 2, 1942, the Temporary Joint Pipe Line Subcommittee recommended that the 20-inch line should be independent of Project 5.

"5. If the line is built from St. Louis to New York, it will be necessary to load and unload tank cars in order to deliver the material to the line, and then to load the material at the end of the line for distribution to terminals. By contrast, if the line is built as approved, it is necessary to load and unload the tank cars only once, moving them directly from Norris City and Seymour to the East Coast terminals, thus saving very materially on tank car time.

"6. If the line is built from St. Louis to New York, it must be filled by tank car shipments from the Gulf Coast, which would require diversion of tank cars from District 1 service. On the other hand, if the line is built first from the Gulf Coast, it can be filled directly and tank cars will remain in District 1

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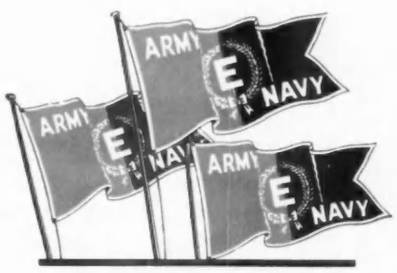

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service until the oil is ready to move from the end of the line. This loss of tank car movement of more than a million barrels would be particularly serious, since it would occur in a period of critical shortage next winter.

"7. If the line is built from the Gulf Coast to Seymour, it will afford a measure of insurance for the Eastern section of the 24-inch line in case something should happen to the Mississippi River crossing or to the Southwestern portion of the 24-inch line.

8. The minutes of the Joint Tank Car Subcommittee meeting of July 16, 1942, show the time required to handle tank cars over symbol routes. The figures indicate that Eastern lines average better running time than the Southwestern ones to St. Louis. Furthermore, by building the line from the Gulf Coast to Seymour, the St. Louis gateway is avoided which requires four hours switching time. The minutes of the meeting of the ODT Advisory Committee on Traffic Routing and Movement, held February 3-5, 1943, show that Eastern roads can handle substantially more tank cars than at present, whereas no figures are given on how much the Southwestern railroads can handle. This refutes the argument that tank cars could deliver more to the East Coast if the line is built from St. Louis to New York."

Two Venezuelan Companies To Divide Properties

Negotiations are in progress but have not been concluded between Pantepec Oil Company and Standard Oil Company of Venezuela under which the two companies will divide equally the non-producing properties of Pantepec and producing properties (El Roble and Amana) will be operated by Standard on a 50-50 joint account basis. It is proposed that Standard will buy 1,600,000 barrels of Pantepec's oil in the reservoir at 90 cents per barrel on account after royalty deductions and that Standard would take the oil over a period of years with the price adjusted to the prevailing prices.

Wm. F. Buckley, Pantepec president, in letter to stockholders added:

"In addition, Standard assumes the obligation to pay Pantepec for a minimum of 6000 gross barrels of oil a day, less royalty, over a period of three years, beginning on March 1, 1943, and agrees to produce an average of a minimum of 3500 barrels of this oil per day in each period of six months.

"Standard will receive credit for the oil that it does not take and will remove it later, and the price will be adjusted as of the date the oil is moved. Standard will, during the said three-year period, increase the movement of oil from the Pantepec properties in proportion as it increases the marketing of its own oil from Eastern Venezuela above 60,000 barrels a day, but shall not be required to pay for or produce over 10,000 barrels per day for Pantepec's account."

Buckley said 20 additional wells would be drilled in the Mulata field, adding it was contemplated that shipment of Mulata oil would begin in three or four months.

Reports have it that Socony-Vacuum Oil Company is interested in at least some of the very large acreage released to Pantepec under this agreement.

Texas March Allowable Increased To Provide Oil for Big-Inch Line

The Texas Railroad Commission's March proration order fixes a net allowable of 1,501,800 barrels per day, which is 199 barrels less than the amount recommended by the Petroleum Administrator for War, who had recommended an increase of 50,000 barrels daily from District 3 to go to the big-inch line.

The order increases the allowable 43,068 barrels above the figure on February 20. The schedule provides for 1,471,207 barrels of crude oil daily, but the commission estimates that operators will not be able to produce 5.97 percent of this allowable or 87,831 barrels, reducing crude-oil output to 1,383,376 barrels per day. Distillate and natural gasoline production is estimated to total 118,425 barrels, and this with the estimated crude oil brings the total to 1,501,801 barrels daily.

Most of the fields will be shut down for 11 days, leaving 20 producing days which is a slight increase over the February allowance.

Of the increase, 41,578 barrels went to fields in District 3, as recommended by PAW. The East Texas Field was raised 1000 barrels, and the Panhandle was cut 1200 barrels. Comparative figures by districts are shown below:

District	Feb. 20	March 1
1	20,437	20,443
2	82,925	83,383
3	298,931	340,509
4	109,765	109,870
5	18,459	18,489
E. Tex.	327,250	328,290
6	87,275	87,304
7B	27,741	27,776
7C	18,872	18,900
8	208,931	209,870
9	127,873	127,894
10	99,680	98,479
	1,428,139	1,471,207

Comparable allowables for fields in the Gulf Coast area which were increased more than 500 barrels over February allowances are listed below:

DISTRICT 3

Field	Feb. 1	March 1
Anahuac	11,175	29,094
Bay City	1,981	3,100
Beaumont West	1,984	2,546
Clodine	577	1,314
Dickinson	2,404	3,901
Dyersdale	2,146	3,326
Fairbanks	9,885	10,842
Fannett	2,056	3,161
Gillock	5,039	6,417
Hammon	1,848	3,219
Hardin	5,839	6,339
Hastings	56,855	65,565
Joe's Lake	3,234	4,650
League City	2,432	3,457
Lochridge	2,026	3,373
Magnet Withers	8,625	9,625
North Withers	6,538	7,500
Manvel Miocene	2,894	3,769
Manvel Oligocene	4,239	5,200
Mercy	1,158	2,850
Nome	1,854	3,100
Old Ocean	14,028	15,862
Oyster Bayou	1,148	1,938
Pierce Junction	2,630	3,643
Red Fish Reef	1,237	1,890
Seabreeze	493	1,008
Segno Deep	4,733	5,282
South Houston	3,066	6,176
Thompson	19,909	24,692
Thompson So.	4,195	5,618
Tomball	11,823	13,068
Webster	12,661	13,396

Details of the shutdown order are listed below:

20 producing days statewide.

28 producing days in the following fields:

District No. 2. Heyser and West Ranch.

District No. 3. Lovell's Lake, Amelia, Sugarland, Clear Lake and Webster.

District No. 4. Orange Grove, Hoffman and Rincon.

District No. 8. Yates.

District No. 9. (Mississippi Lime) Antelope, Bonita, Chapman - McFarlin, Clingingsmith, Hapgood, Hoefle, Kadane, Kadane Shallow, Mankina, Mueller, Ringgold, Sanders, Scotland (Mississippi Lime), Wilson, Forestburg, Worsham-Steed, and Rock Crossing (Ellenberger).

27 producing days in East White Point and Old Ocean.

24 producing days in Emperor, Slaughter, Waddell, and the Panhandle.

21 producing days in KMA.

17 producing days in Abell, Abell Permian, North Cowden Deep, and South Cowden.

The following changes were made in the list of fields exempted from all shutdowns:

District 2: Tynan added.
District 3: West Silsbee, South Buckeye and North Withers added.
District 4: Dulup added.
District 6: Kildare addded.
District 8: Monahans added.
District 9: Illinois Bend, Holbert Caddo and Murray added.

Texas Bill Would Cut Out Pipe Line Proration

With the clear purpose of eliminating pipe-line proration, a bill requiring Texas pipe lines to accept the full allowable assigned under railroad commission proration orders has been introduced in the Texas legislature by Representative Harley Sadler, of Sweetwater.

The bill fixes a penalty of from $2000 to $5000 for violation. Suits may be brought in any court in any county where the violation occurred, or in Travis County.

Defendants may not plead that their plants or equipment are such that the oil would be unsatisfactory.

Southwest District API Meeting To Be in Houston

The regular spring meeting of the Southwestern District, API Division of Production will be held in Houston, at the Rice Hotel, April 29-30. A program on subjects and discussions of policies and producing practices helpful in the war effort is being prepared.

API Division Meeting At Tulsa May 20-21

Tulsa has been named as the place for the spring meeting of the Mid-Continent Section, Production Division of the American Petroleum Institute. The tentative dates are May 20 and 21.

Magnolia Companies Have Plan to "Buy" Vacation

Field workmen of the Magnolia Petroleum Company and Magnolia Pipe Line Company and those of the refining division have been given an opportunity to forego their regular vacation during 1943 and receive double compensation while remaining on the job during the allotted period, according to D. A. Little, president. Those desiring vacations will be permitted to layoff when relief men are available, although experienced substitutes will not be available in all departments. Employes who elect to remain on the job without vacations will be given their vacation pay in quarterly installments, beginning March 15.

Production and Refining in Line Except for Large Fuel Demands

Both production and refinery runs of crude oil were less than 5 percent under the year-ago trend in the week ended February 20, in reflection of the comparatively heavy demand; and operations were fairly well in line with current needs, as evidenced by generally satisfactory changes in stocks, although it still was necessary to draw on stocks of heavy and light fuel oils which already were lower than desirable.

Crude runs to stills for the week were 89,000 barrels a day greater than in the previous week, having averaged 3,694,000 barrels daily, representing 76.8 percent of the rated capacity of all United States refineries. The new rate was 4.6 percent under that of 3,876,000 barrels daily of the corresponding week a year ago. Increases in refinery runs were recorded for all districts except the upper Mid-Continent and California.

Stocks of residual fuel oil dropped to a new low for modern years in further declining 238,000 barrels between February 13 and 20, having totaled 70,428,000 barrels as of the latter date—an amount 17,397,000 barrels or 19.8 percent less than the 87,825,000 barrels reported February 21, 1942. Rocky Mountain and Middle Western refining districts were the only areas which added to storage. The week's withdrawal from storage was due largely to the fact that production of residual was 168,000 barrels under that in the previous week. The only districts that increased production were the upper Mid-Continent and the Rocky Mountain area.

Inventories of gas oil and distillate fuel were used up in the amount of 925,000 barrels in the week of February 20, in reflection of extremely cold weather, production of the light fuel oils having been only 109,000 barrels less than in the preceding week. Having declined to 33,367,000 barrels, they were 2,066,000 barrels or 5.8 percent under the level at which they stood February 21 last year. All districts except Oklahoma-Kansas-Missouri drew from storage, and the latter district was about the only one which did not show a decrease of production to account for withdrawal.

Stocks of finished and unfinished gasoline were contra-seasonally reduced 98,000 barrels in the week ended February 20, in consequence of a similar reduction in the production of that product, the output having been 129,000 barrels less than in the previous week. The lower production reflected decreases in the Eastern districts and in the upper Mid-Continent. Apparently, those curtailments in production resulted, especially in the East, from further lowering of the yield of gasoline, in order to increase output of urgently needed fuel oils. For in the East, crude was charged to stills in even larger volumes than in the preceding week.

Production of crude oil was practically unchanged from the previous week in averaging 3,874,000 barrels per day in

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	*State Allowable of Crude Production	PRODUCTION IN WEEK ENDED Feb. 20	Feb. 27
Arkansas	72,671	75,600	75,350
California	780,200	774,700	781,250
Long Beach		33,600	34,100
Midway-Sunset		57,400	56,100
Kettleman Hills		45,350	44,500
Wilmington		95,150	95,100
Rest of State		543,200	551,450
Colorado		6,100	6,100
Illinois		241,700	227,200
Salem		30,600	32,350
Louden		42,050	39,550
Other New Pools		157,650	144,000
Old Pools		11,400	11,300
Indiana		15,850	15,900
Kansas	305,500	316,650	306,400
Kentucky		12,400	12,500
Louisiana	328,357	338,400	337,600
North		91,600	90,850
South		246,800	246,750
Michigan	57,800	63,050	58,550
Mississippi		55,300	53,650
Missouri		100	95
Montana		19,100	22,900
Nebraska		2,500	2,400
New Mexico	100,000	96,750	96,700
New York		14,500	12,300
Ohio		10,950	11,050
Oklahoma	365,300	347,700	350,450
Oklahoma City		58,700	62,900
Seminole Area		80,550	80,550
Rest of State		208,450	207,000
Pennsylvania		47,000	39,300
Tennessee		35	35
Texas	1,336,161	1,343,550	1,352,000
Upper Gulf Coast		321,900	319,750
East Texas Field		324,850	324,850
Rest of Eastern Texas		100,200	102,400
Lower Gulf Coast		92,550	100,800
Southwest Texas		48,500	48,050
South Central Texas		17,200	17,550
West Texas		213,750	214,150
North Texas		135,450	135,250
Panhandle		89,150	89,200
Utah		15	15
West Virginia		9,650	7,700
Wyoming		88,900	91,800
Total 8 Prorated States	3,345,989	3,356,400	3,358,300
Total United States		3,880,550	3,861,245

* Details on state allowables in The Oil Weekly of February 8, page 48.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gas Oil & Distillate Stocks Barrels	Gas Oil & Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1939	3,910	8- 5	3,659	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]107,229	3-14	49,861	11-14	95,857	1- 3
1943	3,874	2-20	3,734	1- 2	234,239	2-13	92,215	2-20	42,913	1- 2	72,881	1- 2
Lows:												
1939	[2]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,605	2-13	232,191	1- 9	82,420	1- 2	33,367	2-20	70,428	2-20
Trends in 1942 (Week Ended):												
Jan. 3	4,038	.....	3,961	.....	244,440	.....	92,987	.....	49,357	.....	95,857	.....
Jan. 31	3,871	.....	3,848	.....	250,740	.....	97,810	.....	40,674	.....	91,189	.....
Feb. 28	4,016	.....	3,675	.....	259,373	.....	105,635	.....	34,547	.....	88,285	.....
Mar. 28	3,820	.....	3,667	.....	263,208	.....	105,624	.....	31,756	.....	83,045	.....
April 25	3,581	.....	3,506	.....	257,073	.....	102,897	.....	29,240	.....	81,107	.....
May 30	3,877	.....	3,522	.....	255,023	.....	95,355	.....	31,384	.....	79,628	.....
June 27	3,719	.....	3,581	.....	253,364	.....	88,396	.....	32,851	.....	77,304	.....
July 25	3,691	.....	3,658	.....	249,262	.....	82,281	.....	35,966	.....	77,816	.....
August 29	3,964	.....	3,697	.....	249,007	.....	80,831	.....	42,060	.....	78,034	.....
September 26	3,909	.....	3,802	.....	242,785	.....	80,550	.....	45,945	.....	78,943	.....
October 31	3,901	.....	3,731	.....	239,266	.....	79,159	.....	48,131	.....	79,166	.....
November 28	3,878	.....	3,736	.....	234,850	.....	78,854	.....	49,739	.....	77,796	.....

Trends in 1943 (Week Ended)	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gas, Oil & Distillate Production Weekly	Gas, Oil & Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
Jan. 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
Jan. 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
Feb. 6	3,853	3,692	232,823	10,479	90,253	4,220	35,503	7,690	71,095
Feb. 13	3,871	3,605	234,239	10,453	92,313	4,138	34,292	7,573	70,666
Feb. 20, 1943	**3,874**	**3,694**	.....	**10,324**	**92,215**	**4,029**	**33,367**	**7,405**	**70,428**
Feb. 21, 1942	4,077	3,876	[4]254,463	12,506	106,984	3,799	35,433	6,813	87,825
Change:									
In week	+3	+89	+1,416	—129	—98	—109	—925	—168	—238
In year	—203	—182	—20,224	—2,182	—14,769	+230	—2,066	+592	—17,397
In year	—4.9%	—4.6%	—7.9%	—17.4%	—3.8%	+6.0%	—5.8%	+8.6%	—19.8%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, February 14, 1942.

the week ended February 20, and that figure was 4.9 percent under the 4,077,000 barrels of daily output in the week ended February 21 last year.

The former downward trend of crude-oil stocks was reversed in the week ended February 13, when 1,416,000 barrels went to storage, leaving on hand at the end of that week 234,239,000 barrels —20,224,000 barrels or 7.9 percent less, however, than on the corresponding date a year ago.

Some Relief Provided in Eastern Fuel Shortage

Markets have continued featured by shortages in the East Coast district and the Middle West, although some emergency relief from extremely cold weather was afforded at North Atlantic points when the Navy released substantial quantities of fuel oils for civilian use. Such relief especially affected areas in New York and New Jersey, and there was were special shipments also into New England, supplies having been moved there in box cars. Late last week the most severe shortages that prevailed were those of kerosene, it was said. Although there had been a critical situation on heating oils in the Boston area, relief was afforded through arrival of heavy shipments of No. 2 fuel, which were then available for distribution under a previously formulated temporary priority plan.

In the Western Pennsylvania refining district, continued instability of neutral oils features the market. Although some refiners report the neutrals fairly firm at present prices, there has been some lowering of quotations in effort to attract business; and there is not any great degree of optimism over the outlook for the immediate future. Movement of gasoline also is somewhat slack under the government's quota restrictions, and some material is backing up in storage. Other products are in heavy demand and moving steadily, while refineries are short on kerosene, fuel oils, bright stocks, and cylinder stocks.

In the Middle West, lack of adequate transportation remains an important problem. Tank cars and truck transports are very difficult to find, and breakdowns of transportation units add to troubles, while there is also a shortage of truck drivers. Difficulty is being experienced in fulfilling the demand for gasoline, and the requirements of Ethyl gasoline are particularly heavy in reflection of motorists' desire to obtain maximum mileage from rationed supplies. Some refiners report all time record demand for Ethyl.

In the Mid-Continent there are definite scarcities of light fuel oils and kerosene, with No. 2 fuel especially hard to obtain. Some refiners of the district have been diverting their cars to the Gulf Coast in order to fulfill commitments on fuel oils for shipment to the East. There has been some improvement in the market for bright stocks, and neutrals are steady.

Bureau Report Shows 1942 Oil Production Off 1 Percent

United States crude-oil production in 1942 totaled 1,385,479,000 barrels, about 1 percent below 1941, according to preliminary estimates, the Bureau of Mines disclosed in its monthly oil statement in which December production was reported as 3,887,700 barrels daily, slightly higher than November's 3,870,000 barrels but some 250,000 barrels below the December, 1941, output of 4,138,500 barrels.

The bureau found that production in virtually all the states declined in the final month of 1942, with the exception of Texas and California, output in the former state increasing from 1,381,400 barrels daily in November to 1,402,700 barrels in December, largely as the result of gains in the coastal fields and at Hawkins, and the latter reaching the highest daily rate since October, 1929, at 773,900 barrels a day. For the first time since August, 1942, on the other hand, Kansas failed to set a new record.

Drilling revived slightly in December, it was reported, but the average size of the 804 successful wells was only 180 barrels, compared with 390 barrels for 1447 successful wells in December, 1941.

The small gain in output, coupled with a material reduction in crude runs to stills, resulted in a reversal of the trend in crude stocks and the material withdrawals in November were converted into a small net increase in December, it was stated.

Daily average crude runs to stills

Wholesale Prices of Refined Products in Principal Markets

REFINED GASOLINE	Current Range (Cents a gal.)		Changes from Month Ago	
Oklahoma Refineries:				
60 Octane and Under	5⅛	5¼	...	...
63-66 Octane	5½	5⅝	...	...
72-74 Octane	5⅞	6	...	...
78 Octane, Ethyl	6¾	6⅞	...	...
Mid-Western Tank Car:				
60 Octane and Under	5⅛	5¼	...	...
63-66 Octane	5½	5⅝	...	...
72-74 Octane	5⅞	6	...	...
78 Octane, Ethyl	6¾	7⅛	...	...
New York Harbor:				
68-70 Octane	9¼	9¼	...	...
72-74 Octane	9¼	9¼	...	—1
†Gulf Coast:				
60 Octane unleaded	5	5	...	...
65 Octane unleaded	5⅛	5⅛	...	...
68 Octane unleaded	5¼	5⅜	...	...
70 Octane unleaded	5½	5⅝	...	...
72-74 Octane leaded	5¾	5⅞	...	...
Min. 80 Octane, '39 Research	5¾	6	+¼	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	3⅞	3⅞	...	...
F.O.B. Br'kenr'ge, Tex.	3½	3½	...	...
KEROSINE				
Oklahoma Refineries:				
41-43 water white	4⅝	4½	...	...
42-44 water white	4½	4½	...	...
Mid-Western Tank Car:				
41-43 water white	4⅝	4⅝	...	...
42-44 water white	4½	4½	...	...
New York Harbor	6⅞	6⅞	...	...
†Gulf Coast:				
41-43 water white	3⅞	3⅞	...	—⅛
RANGE OIL				
At Oklahoma Refineries	4	4⅛	...	...
In Mid-Western Market Group 3, basis	4	4	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 prime white	3⅞	3⅞	...	...
No. 1 straw	3⅞	4	...	...
No. 2 straw	3⅝	3⅝	...	...
No. 3	3½	3½	...	...
Mid-Western Tank Car:				
No. 1 prime white	3⅞	3⅞	...	...
No. 2 straw	3⅝	3⅝	...	...
No. 3	3½	3½	...	...
New York Harbor:				
No. 1	6⅞	6⅞	...	...
No. 2	6¾	6¾	...	...
No. 3	6¾	6¾	...	...
†Gulf Coast:				
No. 2	3¾	3¾	...	...

HEAVY FUELS	Current Range (Per Bbl.)		Changes from Month Ago	
Oklahoma Refineries:				
No. 6	...	...	...	...
14-16 Gravity	$0.97	$0.97	+.02	+.02
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.80	.80	...	...
New York Harbor:				
No. 5	1.95	2.10	...	...
No. 6	1.65	1.65	...	...
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
†Gulf Coast	$0.85	$0.85	...	...
New York Harbor	1.65	1.65	...	...
DIESEL OIL (Per barrel, ships' bunkers)				
†Gulf Coast	$1.65	$1.65	...	...
New York Harbor	2.78	2.78	...	...
LUBRICATING OIL (Cents a gallon)				
Oklahoma Refineries:				
Bright stock (viscosity at 210°):				
200 vis. D, 10-25 pour point	27	27	...	...
150-160 vis. D:				
0-10 pour point	23	23	...	...
10-25 pour point	22½	23	...	...
25-40 pour point	23	23	...	...
150-160 vis. E	22	22	...	...
120 vis. D, 0-10 pour point	22	22	...	...
Cylinder Stocks:				
600 s.r. dark green	8½	8½	...	...
600 s.r. olive green	10	11	...	...
631 s.r.	18½	18½	...	...
Neutral Oils (viscosity at 100°, 0-10 pour point): Pale Oils:				
60- 85 vis. No. 2 color	8	8	...	...
86-110 vis. No. 2 color	8½	8½	...	...
150 vis. No. 3 color	14½	14½	...	...
180 vis. No. 3 color	15	15	...	...
200 vis. No. 3 color	15	15	...	...
250 vis. No. 3 color	16	16½	...	...
280 vis. No. 3 color	17	17	...	...
300 vis. No. 3 color	18	18	...	...
Red Oils:				
180 vis. No. 5 color	15	15	...	...
200 vis. No. 5 color	15	15	...	...
280 vis. No. 5 color	...	...	...	...
300 vis. No. 5 color	17½	17½	...	...
Western Pennsylvania: Cylinder Stocks:				
600 s.r. filtrable	15	15	...	...
650 s.r.	15½	15½	...	...
600 flash	16	16	...	...
630 flash	17	17	...	...

LUBRICATING OIL (Cents a gal.)			Changes from Month Ago	
Bright Stock (No. 8 Color, 145-155 vis. at 210°, 540-550 fl.):				
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	25	25	...	...
Viscous Neutrals (No. 3 Color, vis. at 70°):				
200 vis. (180 at 100), 420-425 fl.:				
Zero pour test	31½	31½	...	...
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	23	26	...	...
150 vis. (143 at 100), 400-405 fl.:				
Zero pour test	29½	29½	...	...
10 pour test	28½	28½	...	...
15 pour test	27½	27½	...	...
25 pour test	21	24	...	...

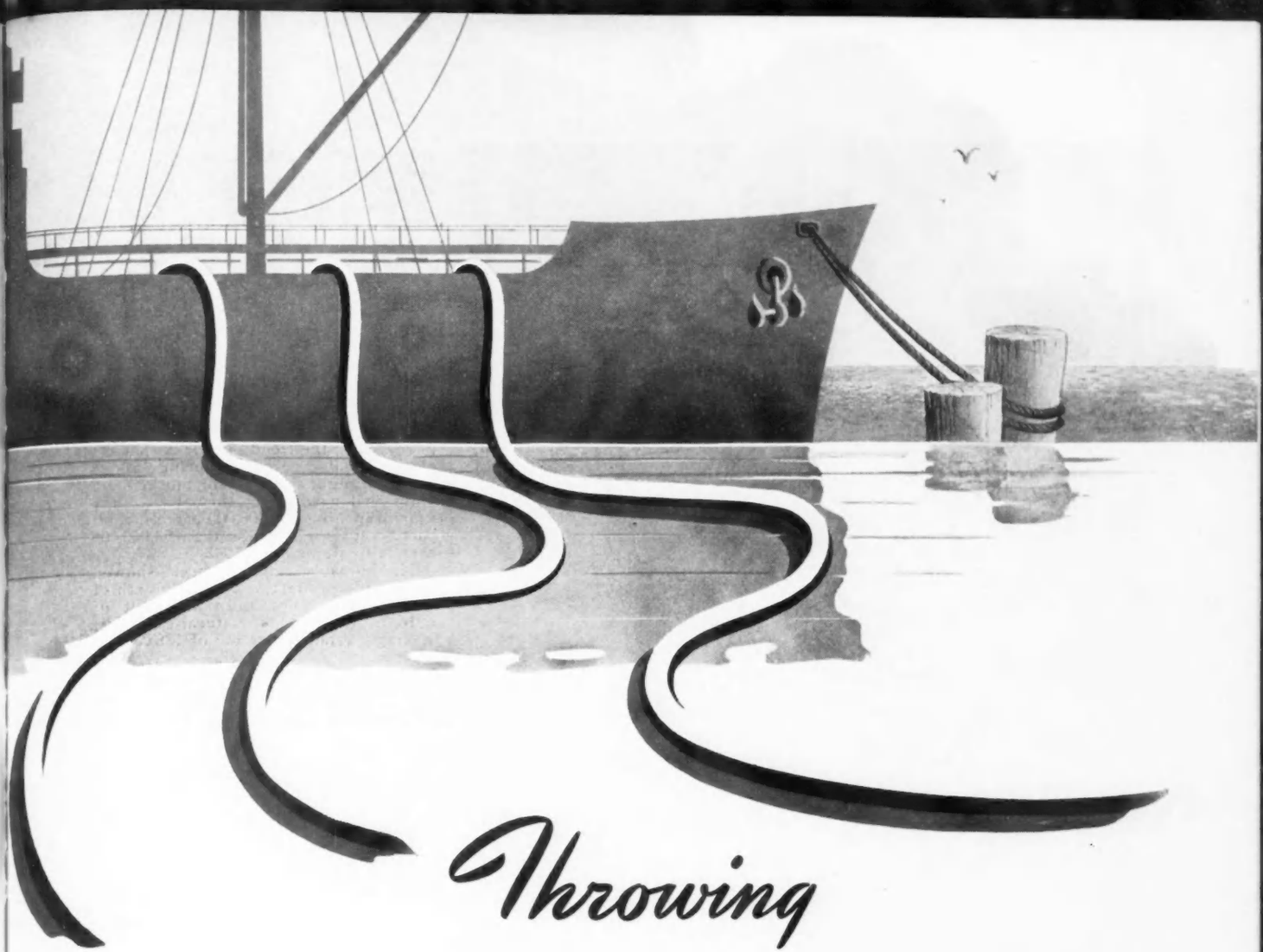
EASTERN STATES CRUDE OIL PRICES

FIELD—	Flat Price	Date Posted
Bradford-Allegany	$3.00	3–26–42
Sw. Pa. Pipe Line	2.65	3–26–42
Eureka Pipe Line, W. Va.	2.59	3–26–42
Corning Grade, Ohio	1.31	5–27–41
Buckeye Crude, Ohio	2.30	6–18–41

MAJOR CRUDE OIL PRICE CHANGES

	Penna. Grade	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
Jan. 1, 1940	Up 25	...	...
Feb. 1, 1940	...	...	Cut *7
May 22, 1940	Cut 25	...	...
June 18, 1940	Cut 25	...	...
July 12, 1940	Cut 25	...	...
Aug. 28, 1940	Cut 15	...	...
Nov. 12, 1940	Up 15	...	...
Dec. 17, 1940	Up 15	...	...
Jan. 27, 1941	Up 15	...	...
April 1, 1941	...	Up 5	...
April 23, 1941	Up 10	...	...
April 24, 1941	...	...	Up *6
May 19, 1941	...	Up 10	...
May 21, 1941	Up 15	...	...
May 22, 1941	...	...	Up *6
June 18, 1941	Up 20	...	...
Aug. 14, 1941	Up 23	...	...
Aug. 25, 1941	Cut 23	...	...
March 26, 1942	Up 25	...	...

* Signal Hill 26 gravity.
†Cargoes, domestic and export.



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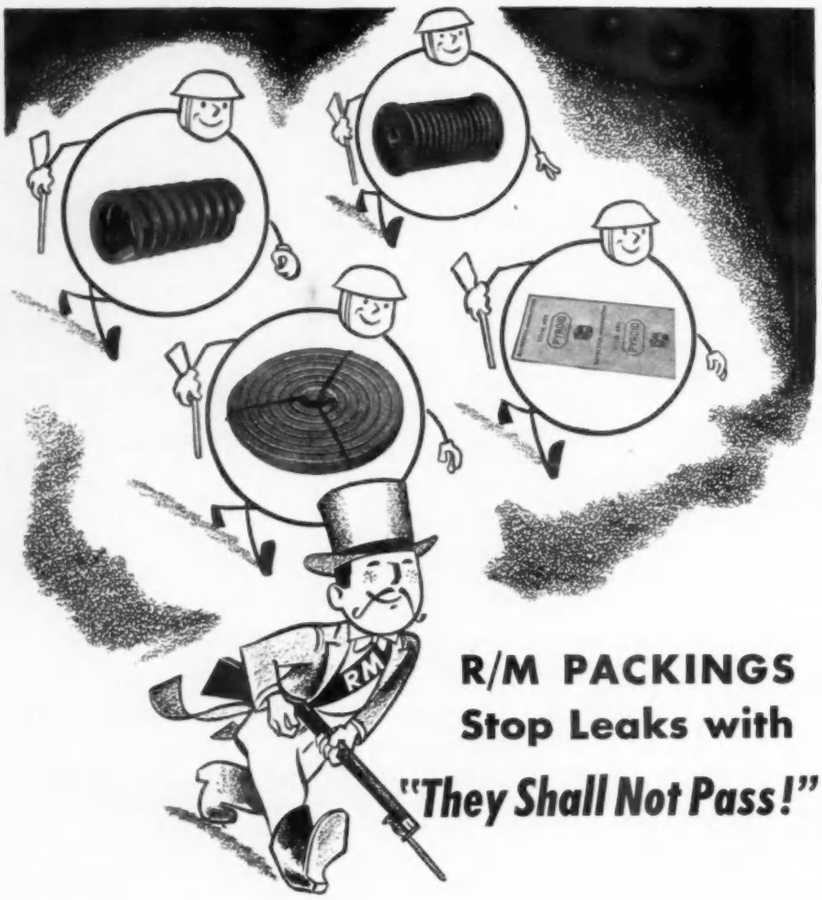

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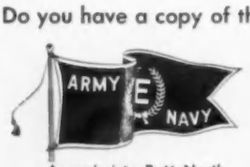

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dropped from 3,746,000 barrels to 3,656,000 barrels, the decline being related mainly to the transportation situation in District 3.

The bureau commented that in December, for the first time, "real" progress was made in adjusting yields to requirements, except for kerosine, the gasoline yield declining to 37.2 percent, the lowest in years, whereas both the distillate and residual yields made small gains.

With pleasure driving banned in the East, the total demand for motor fuel in December, 42,600,000 barrels, was much lower than had been indicated by the preliminary weekly figures, and resulted in reversing the trend of stocks sharply, about 6,200,000 barrels being added which brought the total for finished and unfinished gasoline at the close of the year to just over 80,000,000 barrels, compared with slightly less than 94,000,000 barrels on January 1, 1942.

The bureau's "balance sheet" showed total crude production for the month of 120,519,000 barrels, and an output of 7,516,000 barrels of natural gasoline, making a total production of 128,035,000 barrels.

Stocks at the close of the year included: gasoline-bearing crude in the United States, 234,354,000 barrels; heavy crude in California, 10,865,000; natural gasoline, 4,632,000; refined products, 247,554,000; a total of 497,405,000 barrels.

Bureau of Labor Statistics figures placed the price index for petroleum and products in December at 60.7, the same as in November, compared with 59.8 in December, 1941. The average for 1942 was 59.8 compared with 57 in the preceding year.

Refining capacity represented in the report was 4,580,000 barrels, an increase of 21,000 barrels over November, and the operating ratio was 80 percent, against 82 percent in November and 88 percent in December, 1941.

Estimate Shows Roumania 1942 Output Big Drop

Recent estimates from London place 1942 crude-oil production of Roumania at 5,400,000 to 5,600,000 tons. This compares with 1936 peak of 8,700,000 tons.

Predictions that Roumania's heaviest refinery areas soon may be the object of Russian bombing are being made.

East Texas Well Test Hearing Reset March 15

The Texas Railroad Commission has postponed from March 1, to March 15, the hearing recently requested by Sun Oil Company to determine whether or not the East Texas water-disposal order issued in February, 1942, should be amended with reference to conducting tests on closed-in wells each six months.

Building Gasoline Plant at Pauls Valley, Oklahoma

Otha H. Grimes is constructing a 5,000,000-foot absorption gasoline plant on the Jackson lease in Section 31-4n-1e, on property of The Pure Oil Company, at Pauls Valley, Garvin County, Oklahoma. Contract has been signed to process all of the gas from adjacent leases. After gasoline, propane and butane have been processed, the residual gas will be turned to Lone Star Gas Company.

Drilling Continues Falling Behind; California Strike Opens Big Area

Well completions in the United States continue to fall far behind the number at comparable dates last year, the 285 added through the tabulation on page 63 bringing the total so far this year to 2886 as against 4707 at this time last year. Last week's completions included 41 wildcat wells and resulted in addition of 9 new oil-producing spots, none of which has attracted particular notice.

California's strike of the week before still is the most important development of the year so far as stimulation of activity is concerned. Already there are four wells underway because of it and interest of substantial operators indicates a search will be conducted intensively over an area of 100 square miles unless further work is emphatically discouraging.

The Phillipstown pool in Illinois reports a new oil sand at shallow depth, but the well that found it is continuing to normal levels.

Two Lordsborg pools in McPherson County, Kansas, are being connected by a well that is still testing.

Pump is being installed for a new horizon on the north edge of the Garber field in Oklahoma.

In Michigan, after several months delay, the Bay County area where the state's deepest test was drilled, is to get some further testing.

In North Louisiana, a well is showing for a three-mile extension of the new development in the Carterville area of Bossier Parish.

In the Gulf Coast area, South Louisiana is currently quiet as to wildcat activity; tests are underway that may mean one new field and extensions to others. On the Texas end of the Coast, geophysical crews are working on the follow-up of last December's strike in Jefferson County. Lower down in Texas, the Wilcox still has the interest, heightened for the moment by a showing in Bee County.

A test has been projected to 8000 feet to test Trinity series in Robertson County, East Texas. In North Texas a Jack County discovery is making seven barrels per hour, and in West Texas a Crane County wildcat has enough showing to run pipe to Ellenburger.

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Drilling Deeper After Show at Phillipstown

Shallow oil show found in Phillipstown pool, White County. Deep test scheduled for immediate drilling in Pulaski County. Deep test in Clinton County abandoned.

White County: Jarvis Brothers and Marcell's Garner 3, NE NW NE 31-4s-11e, Phillipstown pool, flowed on a 30-minute drill-stem test of a Pennsylvanian sand at 1447-90 feet but is being drilled deeper to test proved productive zones in the field.

N. V. Duncan's Metcalf 1, SW SW SE 31-3s-14w, pool-opening well 2½ miles southwest of Grayville, to be shot after showing for 75 to 100 barrels in Benoist sand at 2815-26 feet.

Pulaski County: Robinson-Puckett, Inc., are scheduled to begin drilling soon at Polk Realty Trust Co. 1, NW 25-16s-1w, 1 mile north of Mound City and 1 of 4 deep tests the operators are planning on a spread of 200,000 acres in southeastern Missouri, southern Illinois and western Kentucky. Polk Realty 1 is slated to be taken at least to the Trenton and possibly to the Arbuckle lime. At present there is no production in the county.

Perry County: The Texas Company's Matlavish 1, a wildcat in NW SW NE 36-4s-2w, near Tamaroa, has resumed drilling, headed for Trenton lime, after being shut down at 2985 feet through a dry Devonian lime. There has been little deep exploration in the county.

Clinton County: Eason Oil Company's Schuette 1, SE NE 3-2n-4w, a wildcat five miles west of the Boulder field, was at 3175 feet in Trenton lime topped at 3105 feet.

Jefferson County: Magnolia Petroleum Company's Shulick 1, NE NW SW 22-2s-1e, first Osage lime test in the Roaches pool, was being cleaned out but no oil was showing. Shulick 1 was drilled to a dry Devonian lime at 3840 feet and plugged back to the Osage where there was a fair show at 2640-57 feet. The Osage is not now productive in Illinois, although saturation has been found in the formation in at least one other test in the state.

Kentucky

W. F. Lacy and C. Woods' Woods 1, N½ NE NE 21-Q-21, Henderson County wildcat, 2½ miles northeast of Smith Mills pool, was abandoned in Fredonia section at 2680 feet. Same operators have staked location for another wildcat ¾ mile to the south.

Fisher Oil Company's Lee 1, NW NW SE 12-O-24, wildcat two miles northeast of Robards, was abandoned at 2603 feet with no oil shows reported.

Indiana

C. V. Richardson's Shirley England 1, NE NE NW 9-7s-14w, Posey County, five miles west of Mt. Vernon, was drilling below 2768 feet, in or near the McClosky, with no shows of oil reported.

W. A. Schuller et al's Wolf 2, NE NE NE 19-6s-12w, in the Caborn field 10 miles west of Evansville, was completed in Cypress at 2338-45 feet, producing at the rate of 160 barrels of oil a day after a 60-quart shot.

Two Lindsborg Areas Linked by New Producer

Lindsborg and Southwest Lindsborg fields, McPherson County, have been linked by Dickey Oil Company's Franz 1, C W½ SE SE 24-17-4w, which is producing from Viola lime, the formation productive in the adjacent areas. The hole was carried to 3387 feet in the pay and treated. Complete test has not been made.

Barton County: Helmerich & Payne, Inc.'s Roesler 1, SE SE NW 14-18-11w, 3 miles northeast of Feist production, is showing for a new field from Arbuckle lime at 3291 to 3300 feet, with total depth at 3313 feet in the same formation. Two separate zones of saturation were drilled. Casing has been set on bottom for a test.

The Texas Company's Lanterman 1, C SW SW 27-19-11w, east of Ellinwood field, topped Arbuckle at 3331 feet and drilled 2 feet into the lime. Some saturation was evident and a small acid treatment showed oil. No test has been made. This well is probable extension to Ellinwood.

Reno County: Barnsdall Oil Company's Moreland 1, C SW SE 34-25-5w, 3 miles northwest of Hilger field which produces from Viola lime, is at 3600 feet after topping Mississippi lime at 3592 and finding saturation. No test has been made.

Installing Pump for New Horizon at Garber

Garber field, Garfield County, one of the oldest producing areas in North Central Oklahoma, has been given a new producing horizon at Champlin Refining Company's Pendarvis 1, C SW NE 30-23-3w, on the north edge of the field. The hole was carried to 5795 feet, and when perforated with 30 shots between 5689 and 5702 feet tested 35 barrels daily on swab. Pumping equipment is being installed. Both the Simpson and Arbuckle sections were drilled in the test, which found a faulted condition in these beds. It is possible the faulting of these zones is responsible for the accumulation, although such has not yet been established.

Payne Conuty: T. N. Berry, who opened gas production on the edge of

the town of Stillwater at Fee 1, NW SE SE 26-19-2e, is drilling below 4400 feet with four major prospective pays below. Fee 1 was estimated good for 6 million feet of gas from Skinner (Pennsylvanian) sand at 4060-4071 feet. Bartlesville was dry.

Caddo County: In Binger field, Denver Producing & Refining Corporation is drilling by a bad fish at Sah-Cam 1, SE SE SE 3-10-10w, which originally drilled to 10,084 feet in 1936, later to 13,082 feet, only to develop a fishing job at 9300 feet. Unable to clear up the bad hole condition, the company is drilling by at 9300 feet, with intention of going past former total depth.

Pawnee County: Phillips Petroleum Company and Sunray Oil Company are proving a new pay in the East Watchorn-Wilcox field, where Bartlesville sand has previously been drilled without complete test being made. In Derion 3, SW NE NW 25-23-3e, the pay was had from 3530 to 3557, with incomplete drill-stem test showing a partial fill-up.

West Texas

Will Run Pipe Following Show in Crane County

First test on deep-seated Ellenburger structure situated immediately west of the Sand Hills field, Crane County, yielded sufficient free oil on drill-stem test to warrant running pipe. Small oil discovery in Runnels County, and strike pending in Crockett County.

Crane County: Gulf Oil Corporation's Estes 1, 3 miles west by south of Ordovician production on the Sand Hills structure and on a 20,604-acre leasehold, was awaiting casing to try for completion after logging an undetermined amount of oil-saturated dolomite in drilling Ellenburger section to 7608 feet. Drill-stem tests of this horizon confirmed the oil possibilities, and velocity tests followed. This wildcat entered the Ellenburger about 1300 feet low when correlated with the nearest Sand Hills deep well, and is credited with encountering a geological section below Permian series that is somewhat identical to that prevailing in the Shipley-Silurian and Monahans deep areas, Ward County.

Crockett County: John I. and P. D. Moore's Shannon 1-12, Section 12, John Small Survey, 3¾ miles northeast of the Live Oak Pool, filled 1200 feet with oil from lime at 2377-86 feet, then at 2393 feet the hole was partially unloaded with swab to determine rate of fillup. It will likely be completed at this level. Same parties' Shannon-Amerada 1-21, 2 miles southeast, was drilling dry lime at 2090 feet. Moore and Olson Oil Company's Todd-Amerada 1, third wildcat for the area and an Ellenburger project, was drilling shale at 5890 feet.

Runnels County: Pawnee Royalty Company's David 1, C NW NE H&TC-F. J. Ford Section 330, Block 64, 6½ miles northwest of McMillan pool, established a new area in pumping 91 barrels of oil and 140 barrels of water initial, although previously declared a failure after drilling to Ellenburger at 4570-4735 feet. Production is through perfortions in Swastika (Cisco) sand at 2464-66 feet.

Reagan County: Amerada Petroleum Corporation's University 1-R-M, ½ mile west of production, partially defined the Barnhart field in becoming the first failure, having logged Ellenburger porosity at 9265-9328 feet, with water at 9372-94 feet, elevation 2777 feet. The company's University 1-R-L, southwest offset to the discovery, based black shale at 8922 feet, elevation 2754 feet, and was coring at 8950 feet.

Winkler County: The unusual Pre-Permian geological section that extends north from Pecos County along a comparatively narrow belt across Ward County has been outlined by deep exploratory tests in Winkler County. Magnolia Petroleum Company's Walton-State 20 was drilling lime and chert at 9324 feet in Montoya, topped at 9105 feet, and preceded by 270 feet of Silurian and 1215 feet of Devonian. Amon Carter's Walton-Pure 2-C, Keystone area, was drilling exceedingly hard gray lime 8750 feet, possibly in upper Ordovician. Shell Oil Company's Blue 1, near the Ector County line, failed to complete decisive drill-stem test in Silurian satuation at 9120-95 feet, and was drilling lime at 9265 feet.

Andrews County: Magnolia Petroleum Company's University 1-15, first deep test for Mascho-West Fuhrman structure, entered a soft break in lime, possibly equivalent to Fullerton pool pay, at 6930 feet, with nominal oil-stained lime at 7060-65 and 7100-09 feet. Top of Clear Fork was called at 5725 feet, elevation 3219 feet.

Pecos County: Phillips Petroleum Company's Price 1 was drilling black shale at 9310 feet, presumably in Permian. Magnolia Petroleum Company's Eaton 1-29, 5 miles southwest of Abell field, was drilling shale at 6940 feet in Simpson, topped at 6375 feet, elevation 2430 feet.

North Texas

Jack County Discovery Flows 7 Barrels Hour

Jack County prospect converted into flowing well from Bend line, and Ellenburger gas-distillate strike deepening. Four oil producing zones logged by east outpost for Walnut Bend field. Development of established oil areas and wildcat drilling has registered appreciable gain for several weeks. Archer County has semi-wildcat producer, and deep strike pending.

Jack County: Shell Oil Company's Wolfe 1, southeast corner of TE&L 3341, 3½ miles east by south of Jermyn and 1¾ miles northeast of nearest Strawn production, opened a new pool in flowing 7 barrels of oil hourly with gas flow rated at 1,000,000 feet daily after 2-stage treatment with 6000 gallons of acid through perforations at 4375-4500 feet in Bend, topped at 4342 feet. This wildcat plugged back from water in Ellenburger at 5582-5631 feet. Joe Worsham et al's Meador 1-A, a mile northwest of Gibtown and the second Ellenburger strike for the county, was drilling hard lime with tools at 6096 feet after testing nominal flow of gas with distillate from broken porosity in Ellenburger, topped at 6020 feet.

Cooke County: Sinclair Prairie Oil Company's Cox 9-B, Block 68, ¼ mile south by west of a recent new pay discovery and east extension for the Walnut Bend field, indicated oil production when tester was used in sands at 4821 feet, 5021 feet, 5192 feet and 5437 feet, all in Strawn series. The test was coring dry shale at 5475 feet to establish the Simpson contact before running pipe. The company has authorized two more tests in view of the numerous oil sands prevalent on the east flank of the structure.

Archer County: W. T. Hutcheson, Jr., et al's Wilson-McCrory 1, SE SW SW ATNCL 101, recorded nominal extension in pumping 12 barrels initial from sand at 598-605½ feet, having plugged back from water at 606-11 feet. Whitaker Oil Company's Coleman 2, 3 miles northeast of Scotland, showed a small volume free oil after using 3000 gallons of acid in Bend conglomerate at 5686-99 feet, having plugged back from 6004 feet.

Drilling: Substantial gain in field activity has been evident for several weeks. This work generally consists of one or two tests that have been assigned to numerous fields that have overdue offsets, else extensions are being sought. Wildcats likewise are distributed among numerous counties, with Wichita County currently setting the pace.

Clay County: Roy Lee, Trustee's Maddox-Shell 1, recent Bend strike in northeast corner of the county, declined to a 25-barrel pumper on official gauge after indicating a more attractive producer when first tested. Production is from perforations at 5476-5506 feet. The performance is adequate to cause more exploratory tests.

East Texas

Robertson County Wildcat Projected to 8000 Feet

Bowie County wildcat is without shows in upper section of Smackover. Quitman field registers two flowing wells. Trinity series to be explored by projected 8000-foot wildcat in Robertson County.

Bowie County: Bowlen et al's Sims-Shell 1 was drilling lime at 8920 feet in Smackover, topped at 8868 feet, elevation 350 feet. Nearest Smackover production is in Miller County, Arkansas.

Robertson County: Magnolia Petroleum Company's Anderson 1, Jacob Fisher league, is being started with a company rig to explore an 18,000-acre geophysical block, about 2½ miles northwest of Calvert. It is scheduled to drill to 8000 feet to test the entire Trinity series, and possibly continue to the Smackover. This block is on the Mexia-Luling fault trend. Robertson County has had comparatively few tests, other than shallow Wilcox projects. The deepest is credited to Everts Drilling Company and W. M. Manness' Walter Cook 1, which was junked in Austin chalk at 5926-6109 feet.

Wood County: Shell Oil Company's Blalock 1, north offset to the Quitman pool discovery, flowed 173 barrels of 43-gravity oil natural through ¼-inch on 6-hour potential from Paluxy perforations at 6316-50 feet.

Delta Drilling Company et al's Bla-

lock 1 became the fourth producer in flowing 38 barrels per hour through ¼-inch after perforating four sands, aggregating 71 feet, between 6264 and 6350 feet. Two more offsets to production were coring for the Paluxy pay, and Amerada Petroleum Corporation has rigged up its west outpost.

Freestone County: Carter-Gragg Oil Company's Steward 1, Steward Mill prospect, tested a small volume of gas with a trace of oil and water from Woodbine perforations at 4019-22 feet, then perforated at 4001-06 ft.

Wildcats: Tidewater Associated Oil Company and Seaboard Oil Corporation's Bacon 1, Franklin County, entered first Glen Rose at 6065 feet and stuck drill pipe at 6302 feet.

In Van Zandt County, Carter et al's Hazel 1, was drilling Paluxy water sand at 6440 feet, and Royal Petroleum Corporation's Key 1 entered dry Woodbine at 3865 feet, elevation 506 feet, and was drilling at 4710 feet.

Southwest Texas

Bee County Wildcat Showing for Producer

The Wilcox sand trend continues to be the chief interest in new wildcat tests. Several of the wells that have drilled to this sand have indicated production while others have found shows, thus drawing more attention to deeper wells. A well north of the old Voss field in Bee County is showing as a potential opener while Atlantic Refining Company and Continental Oil Company have completed a Wilcox producer to open the Cabeza Creek in Goliad County.

There are indications that companies will continue to drill both old and new prospects within the next few months in the Karnes-Bee-DeWitt-Goliad area. Although there is some shallow production along this particular trend there has never been a concentrated effort to open the deeper production from the Wilcox.

Bee County: Dirks Brothers have set casing to around 8100 feet in Page 2, wildcat and prospective field opener one mile northeast of shallow production at Voss. Operators confirmed the well showings with a sidewall sample taken at 7614-78 feet in the Carrizo section. First sand was logged at 7460-7511 feet which showed 110 feet of 50-gravity, amber-colored distillate on a drill-stem test. An electrical survey was run to 7810 feet and then logged a second possible productive sand at 7614-78 feet. The apparent discovery is in Thomas Pilkington survey.

Goliad County: Atlantic Refining Company and Continental Oil Company have run official gauge on Pettus et al 1, Wilcox sand discovery in Cabeza Creek area. The well flowed 37 barrels of distillate through 3/16-inch choke with 1,972,000 cubic feet of gas from perforations at 7645-76 feet in Wilcox. Total depth of the discovery is 8978 feet with 5½-inch casing set to 8530 feet. Gas-distillate sands were found at 7811-14 feet, 7743-60 feet and 7545-76 feet. The Wilcox was topped at 7325 feet. Location is in Sebastiano Vela survey, 12 miles northwest of Goliad townsite.

Discovery: George W. Strake has completed gauge on Yates 1, new field discovery, officially named Strake, in northeast Duval County. The well

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gauged 450,000 cubic feet of gas from perforations at 3168-72 feet in Government Wells sand. The gas test was made while the well jetted 8 barrels of oil and 12 barrels of salt water daily from perforations at 3723-31 feet in Pettus sand. Previously, the well flowed 10,000,000 cubic feet of gas daily through open choke from perforations at 3168-72 feet. The discovery is 3 miles northwest of Fitzsimmons field in southeast corner of SA&MG survey 1.

Outpost: H. D. & H., Inc., is making a flow test on Wright 2, well southeast of production in Riverside field of Nueces County. The well is testing in perforations at 5240-63 feet in new pay sand after recovering 50 feet of distillate-cut mud and showing 275 pounds working pressure on drill-stem test of this horizon. The well, located in southeast corner of 300-acre portion in share 4-W of W. W. Wright lands, is 4300 feet southeast of production. Other wells produce gas from 4884-4900 feet.

Texas Gulf Coast

Jefferson County Getting Attention from Operators

Prospects in Jefferson County are again being revived and drilled 42 years after the discovery of Spindletop. The new interest was touched off in December, 1942, when Glenn H. McCarthy gave a major extension to the Stowell field which points to the area as a major oil reserve. As a result of this strike several companies are conducting intensive geophysical work in the area and acreage is being assembled for future drilling in many instances. In an effort to extend Stowell production even further, a wildcat has been staked west of the field to test the Marginulina and Frio sands.

Jefferson County: Glenn H. McCarthy et al have staked a deep test 1½ miles southwest of Hankamer-McLean 1, extension on the north side of the field proper. The new location is Philo Broussard 1 and is on a 240-acre lease in the L. Lopez survey.

McCarthy has abandoned Shelby 1, a 10,017-foot wildcat three miles northwest of Port Arthur, in T&NO.

Waller County: Stanolind Oil & Gas Company is preparing to make a new flow test on Pattison 1, wildcat three miles north of Katy field. Operators ran a 25-minute drill-stem test at 7751-57 feet and recovered salt water. Perforations have been squeezed and new holes are due to be made at 7541-46 feet for squeeze job to shut off salt water. Total depth is 8000 feet with 5½-inch set to 7870 feet.

Montgomery County: Superior Oil Company is triple completing a well on north edge of Lake Creek field, the first completion of this type ever attempted on the Coast. The well, McWhorter 5-B, will be produced through perforations at 9250 feet, 9750 feet, and 9950 feet in Wilcox. These levels flowed oil on drill-stem tests. The well will be produced through the tubing from the lower sand, through the space between the 5-inch tubing and the tubing in the second sand, and through the space between the 7-inch pipe and 5-inch pipe in the upper sand.

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South Louisiana

Wildcats and Outposts Making Production Tests

Although new wildcatting activity has reached a new low ebb in the coastal area, several wells—wildcats and outpost tests—are making flow tests which should open one new field and extend production in other areas. The well holding main interest is on Shuteston prospect in St. Landry Parish. At first it was thought that this wildcat would open production from Wilcox sand, but operators already have plugged back higher in the hole and are attempting to establish the shallower sands to production.

A wildcat on the north flank of the Anse la Butte dome is drawing more than usual interest as it makes its perforations. This old dome, which is in Lafayette Parish, long has been the center of much drilling, mostly on the top of the dome. Interest in its flank possibilities were revived in 1941 when W. R. Davis & Company opened production on south side of the structure.

St. Landry Parish: Sun Oil Company is making test in the 9500-foot sand in Burleigh 1, wildcat in Section 37-7s-4e. Perforations were made at 9495-9501 feet, screen set and hole washed. Although details as to sand conditions at this depth have not been announced, it is reported that testing operations have been halted temporarily to make repairs in flow valves.

Lafayette Parish: Stanolind Oil & Gas Company is making first flow test in Nickerson 2, wildcat on the north flank of Anse la Butte dome in Section 43-93-5e. Total depth of the hole, which was sidetracked, is 10,346 feet with 4½-inch liner set from 9,104-10,343 feet. This well is southwest of another flank discovery which was completed with perforations at 9782-9818 feet.

Acadia Parish: Union Sulphur Company is still fishing for drill stem in Gueno Estate 1, wildcat discovery of Branch gas-distillate field in Section 51-8s-2e. The well blew wild for several weeks, sticking the drill pipe. Gueno Estate 2 was drilled directionally to kill the flow in the discovery. Then operators went back into Gueno 1 in attempt to recover the pipe. Total depth of the discovery is 10,447 feet with 7-inch casing set to 10,252 feet. The blowout occurred near the bottom of the hole.

Beauregard Parish: American Republics Corporation has set a depth record in a Wilcox well for the Bancroft area with Lutcher-Moore 1-X drilling below 12,315 feet. The Wilcox sand was reported to have been topped around 9684 feet, and the drill bit should be more than 2600 feet inside the formation. Details as to what has been encountered have not been released.

Calcasieu Parish: Union Oil Company is making a flow test on Gray 6-G, flank test on north side of Vintom dome in Section 33-12s-12w. The company recently opened the flank to production and has been conducting a steady drilling program ever since. The well has 5½-inch casing set to 5837 feet, total depth.

HAROLD W. HOOTS, chief geologist for Richfield Oil Corporation, Los Angeles, was in Houston on business last week.

North Louisiana

Carterville Three-Mile Extension Has Oil Show

Moving east although still flanking the old shallow Carterville field to the north, a probably three-mile east extension is in the offing for new deep Pettit lime production at Hunt Oil Company's Pardee A-1, NW NE 18-23n-11w, Bossier Parish, and at last report operators were recovering mud, acid water and oil from a 6000-foot horizon. Meanwhile, south and east of the discovery, in SW SE 3-23n-12w, the company's Oglee 1, NE NE 10-23n-12w, the third well for the area flowed 84 barrels of oil during a 24-hour period after operators used acid in Pettit lime at intervals from 6030 feet to 6138 feet.

Webster Parish: At the north edge of old Shongaloo field and east of north Bossier Parish activities and nearing the flush Pettit lime pool at Haynesville, F. R. Sylvestre is testing Haynes 1, NE NE 29-23n-9w. Shongaloo is a gas field discovered in 1920 which at that time produced from numerous sands in Upper Cretaceous. In 1938 deep Cotton Valley horizon was prospected. Although production from the deeper horizon was never prolific two wells presently flow approximately 30 barrels of 72-gravity distillate per day from Sexton sand 9000 feet.

Concordia Parish: In the Lake St. John field which has 11 oil producers out of 12 prospects completed since June, 1942, California Company and Carter Oil Company halted drilling at 4650 feet, in State Lease 476-2, W½ 13-9n-10e. A drill-stem test in a horizon at 4617-23 feet recovered salt water. Perforations at 4617-23 feet were squeezed and a 14-hour drill-stem test at 4621-27 feet recovered oil scum and salt water. Further testing is under way at State Lease 476-2 which is drilling directionally under the lake bed from 50 feet inland from the east shore line of Lake St. John. Operators at State Lease 476-2 set 5 whipstocks to 1333 feet and put down 7-inch casing to 4650 feet. Two miles northwest of Lake St. John production and in Tensas Parish, California-Carter companies are moving in to prospect Rhodes 2, NW 28-9n-10e. In 1941 Carter's Rhodes 1, NW 29-9n-10e showed slightly at 3500 feet, being abandoned at 6599 feet.

DeSoto Parish: On the Longstreet structure north of Logansport gas-condensate production, Oakes-Easton et al's Ramsey 1, NW SW 27-13n-16w, is drilling in Midway to project to approximately 5500 feet to test Glen Rose horizons.

Arkansas

Second Test in Columbia Area Is Failure

Roy Lee, Trustee, quit Pickler 2, NE SW 23-17s-21w, Columbia County, Smackover lime project, at 8146 feet. Shows revealed prolific water flow on testing which apparently could not be brought under control at this, the second test at the recently discovered Columbia distillate field, where the same operators' discovery, Pickler 1, SW NE 23-17s-21w, flowed initial of 15 barrels of brownish oil and distillate which later gauge showed 5 barrels of distillate per hour from deep Smackover lime. Columbia field is one mile south of Magnolia city limits and approximately midway between the Big Creek and Magnolia fields.

Pope County: At Silex, Arkansas Louisiana Gas Company abandoned Millsaps 1, SW 23-10n-21w, below Mississippian at 4120 feet. Samples taken during drilling revealed no worthwhile commercial shows at this one-mile-east outpost from the company's Ladd-Strong 1, SW SW 22-10n-21w, which opened a new gas field flowing from two new sands in the Atoka five miles north of the Tate's Island field. Arkansas Louisiana Gas Company moved in a second cable tool rig and drilling is now below 1048 feet at a third prospect the company is putting down in Johnson County, Hendrix 1, SE 21-10n-21w, and located one mile west of Ladd-Strong 1, a producer.

Michigan

Bay County Area Gets Another Deep Test in Spring

Plan new deep test in Kawkawlin field, Bay County. More 5000-foot drilling for Winterfield, Clare County.

Bay County: Gulf Refining Company plans an 8000-foot Salina gas test in Kawkawlin (15n-4e) of Bay County this spring which will mark the first follow-up work since completion of Bateson 1, 2-14n-4e, in 1941 at a plug-back depth of 7850 feet for a 7,000,000-foot gas well. Bateson 1 was carried to 10,447 feet, testing the Trenton and St. Peter. It has been shut in since completion except for periodic pressure tests.

Clare County: Pure Oil Company and Sun Oil Company have made locations for 5000-5200-foot Richfield dolomite

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tests in the Winterfield pool (20n-6w) from ¼ to ½ mile from Pure's McClain 1, S½ SE SE 30-20n-6w, discovery deep well in the field. Pure recently drilled a dry hole in this horizon 1 mile to southeast.

Lake County: Oil Producers, Inc.'s Woods 1, 24-18n-12w, logged Dundee lime at 3372 feet and shut down for orders at 3452 feet. Test, structurally high, may be carried 300 feet deeper to test Monroe.

WILLIAM M. SALMON, for 25 years an employe of General Petroleum Corporation, died recently in Fullerton, California. He worked for the company in Taft and Bakersfield before moving to Fullerton.

California

Large Area To Be Explored Following Fresno County Strike; Four Tests Start

Possibly as much as 100 square miles of the area lying east of Coalinga Nose, in Fresno County, will be exploited by wildcatters before the end is seen of a present upsurge of interest in that region inspired by Standard Oil Company's discovery there last month of a new oil field of major importance.

Standard's discovery well, Pleasant Valley Farms 82-29F, 29-20-16, Guijarral Hills, gauged on a 24/64-inch choke, registered an initial flow of 819 barrels a day. On open-flow test, however, the well probably would make more than 3000 barrels a day, according to estimates based on flow pressure and the other factors involved. Known geological characteristics of the type of structure uncovered suggest it is one of considerable areal extent, and informed observers are inclined to favor high estimates of the new field's potentialities.

First of the new wells announced for immediate drilling as a result of the discovery is one by Robert S. Lytle, operator, in the next section to the north. Following closely was announcement by Standard of one well a half-mile northeast of the discovery well, and of two others in the discovery section. Several other operators are reported to have selected locations for plays of their own on more distant holdings.

Fresno County: Sun Oil Company has joined the large company of operators wildcatting in the "hot" Coalinga area of Fresno County, having leased the W½ 36-20-15; initial test to be drilled immediately.

Superior Oil Company's White 1, Kingsburg area wildcat, proved disappointing, and was listed for abandonment.

Kern County: The Texas Company's Southeast Maricopa wildcat, Pioneer Unit Plan 1, has reached 10,086 feet, and 8⅝-inch casing has been landed at 10,079 feet. Well is intended to be a thorough test of the area's deepest sands.

Los Angeles County: Barry Oil Company's Rowland 1, 14-2-10, wildcat in the Puente Hills area, found showings sufficient to justify casing and a production test. Some 40 feet of sand is to be tested, hole being bottomed at 2423 feet.

San Benito County: Union Oil Company's Friedman 1, wildcat in 9-4-7, Ciervo area, gives early promise of resulting in a worth-while gas discovery. Swabbed through casing, the well started off with 12,000,000 cubic feet daily output, and there is basis for hopes for higher figures.

San Joaquin County: Seaboard Oil Company, Bankline Oil Company and Honolulu Oil Corporations, whose holdings in the Galt area aggregate 25,000 acres, have launched a joint wildcat campaign, thoroughly to test several parts of the properties. The initial wildcat of a three-well program, Bankline Comm. 1-1, 1-4-6, is being started by Bankline, as driller for the joint interests. Gas, rather than oil, is the objective.

Amerada Petroleum Corporation's wildcat Lodi Comm. 9-1, also a gas try in the same general area as that of the Bankline project, is rigging up.

San Luis Obispo County: Los Nietos Company's wildcat Holmes 1, Edna area, near Pismo, got negative showings on a formation test of about 400 feet of sand just below 2690 feet, and is being drilled ahead at 3414 feet.

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On lead lines, as well, this modern asbestos-cement pipe provides these important advantages:

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For salt water disposal systems and for lead lines

United States Well Completions

ARKANSAS

Columbia County—Macedonia: Tide Water Associated Co.'s Foreman-Whitlow Unit 1, n½ sw 21-18s-21w, Cotton Valley, 10 bbls hr, perf 7570-95 ft, td 8948 ft.

Columbia County—Stephens-Smart: T. W. Lee's Hall 2, nw sw 11-15s-20w, Tokio flow 200 bbls, td 2800 ft.

Columbia County—Macedonia Extension Failure: Roy Lee, Trustee's Pickler 2, ne sw 23-17s-21w, abnd 8146 ft.

CALIFORNIA

Fresno County—Coalinga Old Field: Shell's 157-29, 1016 ft n 2335 ft w sec 29-19-15, pump 185 bbls, perf 2197-2248 ft, 2278-2318 ft, td 2318 ft.

Kern County—Belridge South: General Petroleum Corp.'s 42-12, 235 ft n, 790 e c 12-29-21, pump 48 bbls oil, 24 water, 13-gr, 208 ft perf 1115 ft, td 1116 ft.

E. A. Parkford's 7, 701 ft s, 310 e c 12-29-21, pump 66 bbls, 190 ft perf 1117 ft, td 1119 ft.

Kern County—Kern Front: Standard's 35, 1655 ft n, 1001 e swc 15-28-27, flow 36 bbls 13.4-gr, 165 ft perf 2463 ft, td 2465 ft.

Westates Petroleum Corp.'s Cauley 40, 2070 ft s, 330 e w¼ c 16-28-27, pump 27 bbls 14.5-gr, perf 2760-2730 ft, td 2962 ft, pd 2840 ft.

Kern County—Lost Hills: Universal Consolidated Oil Co.'s 21-D, 1120 ft s, 1615 w nec 30-26-21, pump 21 bbls oil, 6 bbls water, 16.7-gr, 622 ft perf 1485 ft, td 1485 ft.

Kern County — Midway-Sunset: Chanslor Canfield Midway Oil Co.'s 44-9, 50 ft s, 335 w c 9-32-23, pump 24 bbls 17-gr, 164 ft perf 2300 ft, first oil sand 2182 ft, td 2514 ft.

Richfield's Fairfield 5A, 5044 ft n, 1130 w sec 11-31-22, pump 15 bbls oil, 18 water, 15.2-gr, 90 ft perf 1270 ft, td 1290 ft.

Standard's 71-5K, 760 ft s, 1735 e nwc 5-11-23, pump 100 bbls 24.5-gr, 115 ft perf 2540 ft, first oil sand 1881 ft, td 3450 ft, pd 2550 ft.

Union's Midway-Northern 3, 600 ft n, 233 e swc 7-11-23, pump 241 bbls oil, 53 water, 11.6-gr, 109 ft perf 1818 ft, td 1956 ft, pd 1820 ft.

Kern County—Mount Poso: Ring Oil Co.'s Bowles 16, 660 ft s, 1500 e w¼ c 29-26-28, pump, no est, 26 ft perf 1699 ft, td 1677 ft.

Kern County—Poso Creek-Premier: Ohio's Midway Premier 14, 2990 ft s, 2317 w nec 32-27-27, pump 160 bbls, 212 ft perf 2801 ft, td 2801 ft.

Standard's 5-15, 1018 ft n, 1638 e e¼ c 5-28-27, pump 43 bbls oil, 55 water, 218 ft perf 2818 ft, td 2820 ft.

Tide Water Associated's Wilcox 3, 1380 ft n, 205 e swc 4-28-27, pump 12 bbls oil, 10 water, 88 ft perf 2746 ft, td 2811 ft, pd 2735 ft.

Kern County — Williams - Antelope Hills: Shell's Williams 66-6, 3553 ft s, 3734 e nwc 6-28-20, pump 48 bbls oil, 37 water, 25 ft perf 2200 ft, sand 2153 ft, IB zone 2100 ft, IIB zone 2364 ft, td 2407 ft, pd 2200 ft.

Los Angeles County—Montebello: Standard's Baldwin 98, 504 ft s, 442 e nwc 1-2-12, pump 16 bbls oil, 60 water, 17.8-gr, 470 ft perf 3113 ft, td 3115 ft.

Los Angeles County — Newhall-Potrero: Barnsdall's R.S.F. 33, 7830 ft s, 10,127 e ppty corner "J," flow 50 bbls oil, 50 water, 16-gr, 24/64-in, 50/0 lbs, 603 ft perf 7297 ft, td 7746 ft, pd 7300 ft.

Los Angeles County—Wilmington: Dunlap Trust No. 2's "W" 7, 155 ft n, 130 w c/l "Q" & Van Tress, pump 72 bbls, perf 3180-3270 ft, 3541-3658 ft, td 3658 ft.

Orange County—Yorba Linda: Shell's Olinda Fee 4, 68-16, 1752 ft n, 1511 w c/1 Citrus & Eureka Aves, 16-3-9, pump 220 bbls, 88 ft perf 2315 ft, td 2320 ft.

Santa Barbara County—Santa Maria Valley: W. R. Gerard's Acquistapace 1, 330 ft n, 330 e swc 22-10-34, flow 300 bbls 18.5-gr, 350,000 cu ft gas, 25/64-in, fp 400 lbs, 390 ft perf 4376 ft, td 4379 ft.

Union's Cox 1, 990 ft s, 990 e w¼ c 29-10-33, Franciscan 2250 ft, abnd 2400 ft.

Ventura County — Ventura Avenue: Lloyd Corp.'s 9, 1145 ft n, 11,043 e c/l No. 11, flow 1100 bbls 33-ga, 396 ft perf 10,016 ft, td 10,016 ft.

CALIFORNIA WILDCATS

Fresno County—Failure: Doheny et al's Lobre 43-24A, 24-19-15, testing area between East Coalinga and Amerada fields, Kreyenhagen 4328 ft, abnd 4344 ft.

Kern County—Failure: Shell's Hopkins Fee 78-31, 31-27-20, try for north extension Antelope Hills field, 23-6 sand 2620 ft, 45-6 sand 2666 ft, abnd 3013 ft.

Kern County—Failure: General Petroleum Corp.'s Railroad 1, 23-28-28, between Kern River and Round Mountain fields, Vedder 2608 ft, abnd 2644 ft.

Sacramento County—Failure: D. D. Feldman's Unit Plan 1, 8-7-6, gas test in Elk Grove area, abnd 4518 ft.

Ventura County—Field Extension Discovery: Carrie Estelle Doheny, Lucy Smith Battson and Los Nietos Company's Elkins 1, 2140 ft n, 1245 e sec 6-3-19, flow 115 bbls 29.1-gr, 10/64-in, 50/275 lbs, 40 ft perf wire-wrapped liner 4917 ft, td 5681 ft, pd 4919 ft.

ILLINOIS

Clay County: McBride's Moench 2, c nw nw ne 10-3n-7e, Cyp 2583-2605 ft, 229 bbls, 2605 ft.

Texas Co.'s Kidwell 2, c sw ne nw 15-5n-5e, Ben 2258-85 ft, Aux V 2294-2327 ft, 250 bbls, 2327 ft.

Texas Co.'s Kidwell 3, c ne ne nw 15-5n-5e, Ben 2298-2310 ft, 35 bbls, 2314 ft.

Clinton County: Texas Co.'s Murphy 5, c sw ne 2-2n-2w, Dev 2616-70 ft, 360 bbls, 2670 ft.

Effingham County: Texas Co.'s Prather 2, c sw se ne 34-6n-5e, Ben 2286-96 ft, 45 bbls, 2300 ft.

Fayette County: Ohio's Williams-Peters 1, c sw ne nw 36-6n-2e, Weller 1598-1613 ft, 10 bbls, 1613 ft.

Carter's Holman 3-D, c se se 3-8n-3e, Dev 3105-07 ft, 77 bbls, 3107 ft.

Magnolia's Rhodes 9, c se ne nw 34-8n-3e, Ben 1600-11 ft, 14 bbls, 1611 ft.

Franklin County: Shell's W. E. Doty 1, nw sw ne 25-6s-2e, Penn sand 1645-62 ft, salt water disposal, 1662 ft.

E. S. Adkins' Peabody 5, sw sw nw 18-7s-3e, Tar Spgs 2037-74 ft, 53 bbls, 2074 ft.

Gallatin County: Carter's Busiek 4, c sw sw se 11-8s-10e, Tar Spgs 2043-53 ft, 22 bbls, 2054 ft.

Hamilton County: National Petroleum Co.'s Harrawood 1, c nw nw ne 19-6s-7e, Aux V 3056-63 ft, 130 bbls, 3063 ft.

Shell's Webb 2, se ne sw 18-6s-7e, Aux V 3042-76 ft, 460 bbls, 3082 ft.

Jasper County: Roy R. Powers' Hall C-1, c w½ ne ne 19-5n-10e, Weller 2488-2501 ft, 106 bbls, 2501 ft.

Jefferson County: Nash-Redwine's Randolph 1, c sw sw sw 27-3s-3e, Aux V 2737-77 ft, 230 bbls, 2777 ft.

Roy Lee's McReynolds 1, c se se 22-3s-4e, McCl 3083-91 ft, 47 bbls, 3161 ft.

Wabash County: Sinclair-Wyoming's Majors 1, c nw sw sw 2-1s-13w, Cyp 2317-29 ft, 48 bbls, 2329 ft.

Moulton & Phillips' Couch 3, n½ n½ sw 16-1s-12w, McCl 2312-19 ft, 10 bbls, 2326 ft.

Wayne County: Pure's Markham 1, c sw sw se 8-1s-6e, Aux V 3014-28 ft, 157 bbls, 3030 ft.

Texas and Sinclair-Wyoming's Jones-Henderson 1, c w½ ne nw 34-1s-6e, McCl 3188-96 ft, 14 bbls, 3212 ft.

Pure's Kays Consol. 1, c sw sw 1-2s-7e, McCl 3317-20 ft, 260 bbls, 3320 ft.

National Refining Co.'s P. Hill 1, nw sw se 29-2s-9e, McCl 3281-93 ft, 191 bbls, 3293 ft.

White County: First National Trust's Sanders 1, c sw sw se 20-3s-14w, McCl 3051-69 ft, 22 bbls, 3088 ft.

Superior's Speck 1, c sw nw sw 31-4s-14w,

Wells Completed in the United States in Week Ended February 27, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

STATE OR DISTRICT	FIELD COMPLETIONS: New Wells Oil	Gas	Distillate	Water Input	Gas Input	Water Disposal	Dry	Total	Old Wells Drilled Deeper Oil	Gas	Dry	Total	WILDCAT COMPLETIONS Oil	Gas	Distillate	Dry	Total	ALL COMPLETIONS This Week	Last Week	Cumulative This Year	Cumulative Last Year
Alabama																						2
Arkansas	2							2								1	1	3	2	19	26
California	21						1	22					1			4	5	27	18	205	185
Colorado																				5	2
Georgia																					1
Illinois	25					1		26					2			5	7	33	43	327	400
Indiana	2	1						3								2	2	5	5	41	74
Kansas	12	1				1	7	21								3	3	24	30	244	336
Kentucky	2						2	4										4	7	38	39
Louisiana	4							4										4	10	91	208
North Louisiana																			4	37	
South Louisiana	4							4										4	6	54	
Michigan	4						1	5					2				2	7	14	72	144
Mississippi																			2	4	34
Missouri																				1	6
Montana																				36	29
Nebraska																					8
New Mexico	2							2										2	9	43	69
New York	12			7				19										19	19	201	235
Ohio	4	10					4	18										18	20	155	273
Oklahoma	10	4					10	24					1			7	8	32	22	233	352
Pennsylvania	37	4					1	42										42	46	409	649
Tennessee																					2
Texas	29						13	42	3			3	3	1		9	13	58	79	630	1,479
East Texas																			9	38	
North Texas	3						4	7	1			1	1			2	3	11	20	143	
West Central Texas	1						2	3					1			2	3	6	5	56	
West Texas	19							19	1			1						20	20	143	
Texas Panhandle							2	2										2	7	48	
Gulf Coast, Upper	2						2	4								2	2	6	4	40	
Gulf Coast, Lower	3						1	4	1			1	1	1		2	4	9	6	87	
Southwest Texas	1						2	3										3	7	61	
South Central Texas																1	1	1	1	14	
West Virginia		6					1	7										7	11	106	142
Wyoming																			1	26	12
Total United States	166	26		7		2	40	241	3			3	9	1		31	41	285	338	2,886	4,707

Clore 2050-52 ft, Tar Spgs sand 2309-55 ft, 1110 bbls, 2355 ft.

Tide Water's Bacon 15, c nw nw se 5-5s-14w, Ben 2748-58 ft, Aux V 2858-75 ft, 23 bbls, 2876 ft.

Sun's Hoosier-Spencer 6, c sw ne nw 6-5s-11e, Tar Spgs 2354-75 ft, 515 bbls, 2376 ft.

ILLINOIS WILDCATS

Edwards County — New Field: Lambert's Van Schoick 1, w½ se nw 18-1n-10e, Aux V 3131-63 ft, 77 bbls, 3172 ft.

Franklin County—Failure: Sun's Old Ben Co. C-1, c nw ne sw 14-6s-1e, abnd 2881 ft.

Hamilton County—Failure: J. W. Menhall's Murta 1, c e½ sw ne 30-4s-7e, abnd 3566 ft.

Jefferson County—Failure: Falcon-Seaboard's Sheppard 1, c se se 8-3s-4e, abnd 3144 ft.

Madison County—Failure: L. Alch's Guzewelle 1, c se ne ne 33-4n-7w, abnd 2370 ft.

Marion County—New Field: Adams Oil & Gas Co.'s Pugh 10-D, c nw se 29-4n-1e, Dev 2892-2908 ft, 103 bbls, 2909 ft.

Wayne County—Failure: Gulf's Vest 1, c sw nw se 18-1n-5e, abnd 2948 ft.

INDIANA

Daviess County: J. W. Cannon's Beck 4, sw ne se 8-2n-5w, Payola 635-40 ft, 5 bbls, 640 ft.

Henry County: Knightstown's Mason 1, c e½ s½ se 31-16n-9e, Trenton 638-50 ft, 25,000 gas, 652 ft.

Vanderburg County: United Oil Co.'s Walling Comm. 1, sw nw ne 32-6s-11w, Walts 1819-21 ft, 20 bbls, 1822 ft.

INDIANA WILDCATS

Elkhart County—Failure: Clifford Vaughn's Miller 1, c w½ se ne 24-38n-4e, abnd 661 ft.

Morgan County—Failure: Wayne Co. Prod.'s Taylor 1, nw sw ne 22-13n-1w, abnd 3330 ft.

KANSAS

Barber County—Lake City: Pryor & Lockhart's Gant A-2, sw sw se 7-31s-13w, Simp 4557 ft, pump 201 bbls oil, 36 wtr, 4571 ft.

Barton County—Kraft Prusa: Black-Marshall's Krier 4, se ne nw 18-16s-11w, Arb 3294 ft, 2271 bbls, 3309 ft.

Barton County—Rick Area: Max Cohen's Rick 2, c e½ nw ne 12-19s-11w, Arb 3354 ft, 2100 gal acid, pump 325 bbls, 3362 ft.

Butler County—Stern: H. & M. Drlg. Co.'s Taving 1, se sw se 21-27s-6e, Miss 2710 ft, pump 35 bbls oil, 100 wtr, 2725 ft.

Cowley County—Henderson: Earl Wakefield's O'Neil 1, c ne ne 27-32s-3e, Arb 3440 ft, pump 15 bbls oil, lots wtr, 3448 ft.

Cowley County—Rahn: Lindsey & Simpson's Waldschmidt 1, c ne ne 14-34s-5e, Bartles 2929 ft, abnd 2945 ft.

Ellis County—Marshall Area: Phillips' Kessler 2, c s½ sw se 32-11s-17w, Arb 3612 ft, 1500 gal acid, pump 37 bbls oil 10 hrs, 3618 ft.

Ellis County—Bemis: Cities Service's Hauser 1, c e½ se nw 34-11s-17w, Arb 3601 ft, 1000 gal acid, 2789 bbls, 3609 ft.

Ellsworth County—Wilkens: Cities Service et al's Ploog C-2, c n½ nw ne 32-17s-9w, Arb 3254 ft, abnd 3261 ft.

Haskell County—Hugoton Area-Ryus Section: United Prod. Co.'s Huxman 1, 27-29s-34w, lime 2547 ft, 8000 gal acid, 10,874,000 cfg, 2750 ft.

Marion County—Lost Springs: Derby's Watson 2, c ne se 29-17s-4e, Miss 2406 ft, abnd 2430 ft.

McPherson County—Lindsborg: Bay's Farmers Bank 1, c w½ nw sw 17-17s-3w, Viola 3348½ ft, 2300 gal acid, pump 23 bbls, 3352 ft.

McPherson County—McPherson: Auto Ordnance's Nordling 1, se ne sw 19-18s-2w, Viola 3265 ft, 1000 gal acid, abnd 3271 ft.

Reno County—Peace Creek: Cities Service's Wiederoder 1, sw ne sw 12-23s-10w, Viola 3738 ft, 500 gal acid, pump 395 bbls, 3753 ft.

Rice County—Pioneer: Harwood's Proffitt 2, c nw nw 25-19s-10w, Arb 3305 ft, abnd 3317 ft.

Russell County—Greenvale: Cities Service's Kejr 1, c s½ se sw 33-14s-12w, Gorham 3189 ft, pump 43 bbls oil, 192 wtr, 3210 ft.

Russell County—Witt: National Ref. Co.'s Boxberger 1, sw ne sw 3-14s-14w, Lans 2988 ft, 1000 gals acid, pump 435 bbls, 3251 ft.

Russell County—Davidson: Adair & Morton's Chegwidden 1, c n½ se sw 28-15s-11w, Arb 3199 ft, 2000 gal acid, abnd 3219 ft.

Russell County—Trapp: Cities Service's Tittle A-4, c e½ ne sw 12-15s-14w, Reagan 3521 ft, Quartzite 3538 ft, input 85 bbls wtr, salt wtr disposal well, 3539 ft.

Cities Service's Bender C-5, c nw nw 26-15s-14w, Arb 3337 ft, pb to 3186 ft, abnd 3346 ft.

Stafford County—Curtis: Skelly's Schmidt 1, c s½ nw sw 6-22s-13w, Arb 3713 ft, 2000 gal acid, pump 341 bbls, 3720 ft.

KANSAS WILDCATS

Ellis County — Failure: Falcon-Seaboard's Penny-Wann 1, c n½ nw nw 14-15s-20w, Anhy 1325 ft, Lans 3380 ft, Base KC 3633 ft, Marm 3702 ft, Cong 3728 ft, Pre-Camb 3859 ft, abnd 3861 ft.

McPherson County — Failure: Westgate-Greenland's Ingemanson 1, c w½ sw sw 2-17s-5w, Miss 3152 ft, Lans 2500 ft, Kinder 3360 ft, Viola 3608 ft, Simp 3670 ft, abnd 3685 ft.

Rooks County—Failure: Harbar Dr. Co. et al's Shaw 1, se se se 36-8s-20w, Topeka 3050 ft, Lans 3259 ft, Base KC 3469 ft, Congl 3498 ft, Arb 3676 ft, abnd 3715 ft.

KENTUCKY

Daviess County: R. E. Cobb's Tinsley 7, 21-N-3, abnd 936 ft.

Henderson County: W. Chenault's Dugan 1, 19-P-27, Palestine 1042-55 ft, 7 bbls, 1055 ft.

Farm Bureau's Burbank 4, 24-Q-21, Cyp 2284-99 ft, 650 bbls, 2299 ft.

McLean County: Young et al's U. Nalley 2-1, 25-M-29, abnd 1402 ft.

SOUTH LOUISIANA

Cameron Parish—Cameron Meadow: Magnolia's Cameron Meadow 39, 990 ft s, 330 w nec 21-14s-13w, 7-in 5493 ft, perf 5386 ft, flow 218 bbls, 11/64-in, td 5493 ft.

Evangeline Parish—Ville Platte: Continental's Jaubert Bros. 1, 400 ft s, 330 ft e nw c 26-3s-2e, 6-in 10,290 ft, perf 10,210-26 ft, flow 138 bbls, 12/64-in, td 10,290 ft.

Iberville Parish — Bayou Blue: Superior's Schwing 21, 450 ft n, 3305 w se c 68-9s-10e, perf 4968-78 ft, flow 120 bbls 7/64-in, td 5428 ft.

Vermilion Parish—Whitelake: Union Oil Co.'s School Board 5-A, s 00 deg 34 mins w 4620 ft, thence due w 1980 ft fr ne c 16-15s-1e, dual completion, 5½-in 6440 ft, perf 5964-96 ft, flow 124 bbls, ⅛-in, perf 6410-18 ft, flow 183 bbls, 5/32-in, td 6440 ft.

MICHIGAN

Arenac County—Kawkawlin: Gulf's Collins 1, n½ sw nw 1-15n-4e, Dundee 2790-2815 ft, swab 40 bbls, td 2835 ft.

Gulf's Sophia 1, n½ nw se 2-14n-4e, Dundee lime, pump and flow 65 bbls, 2869 ft.

Gladwin County—Bentley: Sun's Davis 1, c se se 17-17n-2e, Dundee 3443 ft, pay 3515 ft, Richfield 4711 ft, td 5114 ft, pb 3580 ft, acidized 1500 gal, flow 155 bbls 16 hrs.

Gratiot County—Pine River: Chartiers Oil Co.'s Church 2, ne sw ne 3-12n-3w, Dundee 3278 ft, flow 182 bbls 16 hrs, 18 bbls next 8 hrs, td 3278½ ft.

Van Buren County—North Bangor: Harris Oil Co.'s Smith 1, sw se se 8-2s-16w, Traverse, abnd 1060 ft.

MICHIGAN NEW PAY TEST

Allegan County—New Oil Pay: Muskegon Oil Corp.'s Podurgiel 1, sw nw se 29-4n-12w, otd 1600 ft, Monroe pay 3035-38 ft, td 3320 ft, pb 3078 ft, acid, pump and flow 72 bbls 26-gr. in old Dorr field.

MICHIGAN EXTENSION TEST

Van Buren County—Oil Field Extension: Socony-Vacuum's Adaskevich 1, sw sw sw 9-2s-16w, ½-mi sw North Bangor pool, Traverse pay 1013 ft, pump 12 bbls 1014 ft.

NEW MEXICO

Eddy County: Western Prod. Co.'s Burch 6-C, c sw se 23-17s-29e, flow 100 bbls, 2-in, natural, 2598-2869 ft (broken pay).

Lea County—Eunice: T&P Coal & Oil Co.'s State 25-A, c ne ne 8-22s-36e, flow 264 bbls, 11/64-in, acid 2000 gals, 3820-50 ft.

NEW YORK

Allegany County: Bradley Prod. Corp., Bascom farm, Alma, 6 bbls, Richburg, 1426 ft.

Bradley Prod. Corp., Sprague farm, Alma, 7 bbls, Richburg, 1374 ft.

Ebenezer Oil Co., Norton farm, Bolivar, 7 bbls, Richburg, 1660 ft.

N. V. V. Franchot, Holtum farm, Scio, 6 bbls, Richburg, 1149 ft.

Messer Oil Corp., "M," Allen farm, Alma, 8 bbls, Richburg, 1360 ft.

Curt Oil Co., Williams farm, Bolivar, 6 bbls, Richburg, 1433 ft.

McEnroe & Brown, Witter farm, Alma, 9 bbls, Richburg, 1266 ft.

Marsh Oil Co., Fay farm, Bolivar, 10 bbls, Richburg, 1442 ft.

Messer Oil Co., Coon farm, Genesee, 8 bbls, Richburg, 1342 ft.

Deer Creek Oil Co., Hall farm, Genesee, 5 bbls, Richburg, 1325 ft.

Daggett Oil Co., Daggett farm, Genesee, 9 bbls, Richburg, 1444 ft.

Coats & Sloan, Livermore farm, Andover, 4 bbls, Fulmer, 1336 ft.

NEW YORK INTAKE WELLS

Allegany County: Max Andrews, Clark farm, Wirt, Richburg, 1380 ft.

J. & W. Oil Co., Sawyer farm, Wirt, Richburg, 1420 ft.

Messer Oil Co., Buena Vista farm, Wellsville, Scio, 1052 ft.

New York Oil Co., Gadsby farm, Bolivar, Waugh-Porter, 1442 ft.

Bradley Prod. Corp., Duke farm, Alma, Richburg, 1653 ft.

Bradley Bros., Inc., Withey farm, Bolivar, Richburg, 1449 ft.

Scio Oil & Gas Co., Clark farm, Scio, Scio, 754 ft.

OKLAHOMA

Creek County—Bristow: Tibbins' McMillan 2, e½ nw sw 1-15n-9e, Dutcher zone 2924 ft, shot 30 qts, abnd 2947 ft.

Creek County — Glenn: Sinclair Prairie's Berryhill 47, ne sw ne 16-17n-12e, Glenn sand 1391 ft, shot 140 qts, pump 19 bbls, 1551 ft.

Sinclair Prairie's Berryhill 49, c n½ sw se 16-17n-12e, Glenn sand 1406 ft, shot 140 qts, pump 3 bbls, 1582 ft.

Creek County—Cushing: J. E. Crosbie's Bailey 3, se sw nw 12-18n-7e, Skinner 2635 ft, shot 80 qts, flow 45 bbls, 2671 ft.

Creek County—Jenks: Sooner O&G Co.'s Root 3, c ne ne 16-18n-12e, Dutcher 1665-75 ft, abnd 1675 ft.

Haskell County—Unnamed: L. S. Grumm et al's Phillips 1, c n& ne 10-9n-18e, sand 1250-70 ft, 5 gas, rp 270 lbs, 1270 ft.

Kay County—Dilworth Dist.: C. F. Moffitt's Carroll 1, ne ne sw 24-28n-1e, abnd 110 ft.

Marshall County — Cumberland: Pure's Thompson 107-3, se se ne 33-5s-7e, McL 5237 ft, pay 5654 ft, flow 125.89 bbls 4 hrs, 5773 ft.

Marshall County—Isom Springs: Hewitt Mineral Trust's Adams 4, ne nw ne 6-8s-6e, sand 542 ft, pay 542-49 ft, pump 5 bbls oil, 20 wtr, 555 ft.

Okfuskee County — N. Okemah: British-American's Palmer-Standley 1, sw nw nw 1-11n-9e, Gilcrease zone 3150 ft, pb to 3195 ft, pump 65 bbls, 3225 ft.

Kerlyn and Continental's Kershaw 1, se se ne 15-12n-7e, Dolo 4640 ft, pb to 3943 ft, abnd 4725 ft.

Oklahoma County—Britton: Kerlyn's Jenkins 1, ne ne sw 28-13n-3w, Dolo 6820 ft, abnd 6907 ft.

Okmulgee County—Beets-Rapp: Wise Drilling Co.'s Fields 2B, c w½ nw 28-13n-11e, salt sand 1820, pb to 1892 ft, 500,000 gas, 1893 ft.

Okmulgee County — Pollyanna: Junior's Ricks 2, ne nw nw 28-16n-11e, Taneha 2186 ft, 800,000 gas, rp 450 lbs, 2188 ft.

Osage County—W. Avant: Cities Service's Tribe 487, c e½ ne nw 15-23n-10e, Miss 2091 ft, abnd 2141 ft.

Osage County—Okisa: Cities Service's Tribe 448, c w½ sw sw 7-26n-11e, Miss 1921 ft, abnd 1955 ft.

Pawnee County—Cleveland: Sinclair Prairie's Jones 43, c nw nw 20-21n-8e, Bartles 2334 ft, shot 80 qts 2362-2418 ft, pump 40 bbls oil, 12 wtr, 2420 ft.

Pawnee County — E. Watchorn: Phillips' Traven 2, sw sw sw 25-23n-3e, Mise 3912 ft, pb to 3936 ft, flow 376 bbls, 3940 ft.

J. E. Crosbie's Doyle 3, sw ne nw 36-23n-3e, Wx 4071-80 ft, abnd 4080 ft.

Pontotoc County—W. Fitts: Roodhouse and Phillips' Close 1, n½ ne se 28-2n-6e, Caney 3500 ft, swab 15 bbls Union Valley and 2nd Cromwell, abnd 3506 ft.

Pontotoc County—Conservation: Vierson et al's Urschel 1, sw se nw 21-5n-6e, Hunton 2576 ft, 1000 gal acid, abnd 2755 ft.

Pottawatomie County—Unnamed: Atlantic's Turner 1, ne ne sw 1-9n-4e, Hunton 4150 ft, pb to 4275 ft, 3500 gal acid, flow 200 bbls, 4390 ft.

Seminole County—W. Seminole: Wood's Shaw 1, nw sw se 28-9n-6e, Wx 4124 ft, shot 50 qts, pump 200 bbls, 4150 ft.

Stephens County—Doyle: Ohio Fuel & Supply Co.'s Simpson 1, ne ne se 11-1n-5w, sand 6143 ft, pay 6155-70 ft, shot 15 qts, flow 206 bbls, ½-in, 8,400,000 cfg, 6225 ft.

OKLAHOMA WILDCATS

Jackson County—Failure: Lloyd Noble's MacDowell 1, c ne nw 24-2n-21w, Wichita Albany 1030 ft, Pont 1470 ft, T. Arb 3929 ft, abnd 4015 ft.

Pottawatomie County—New Field: Stanolind et al's Bleeker 1-A, nw se sw 28-10n-2e, Paw 1850 ft, Bell City 3565 ft, Hogs 3990 ft, Checker 4260 ft, Osw 4960 ft, Earls zone 5195 ft, Mayes 5320 ft, Wood 5362 ft, Hunton 5380 ft, Syl 5615 ft, Viola 5715 ft, Dense 5763 ft, Dolo 5810 ft, 1st Wx 5877 ft, Hunton 5377-5412 ft, Viola 5728-42 ft, Dolo 5802-08 ft, Dolo 5830-37 ft, Wx 5876 ft, flow 347 bbls, 1/32-in, 38.9-gr at 41°, 1310 lbs press on csg and 790 press on tubing, td 5876 ft.

Garvin County — Failure: Harry Cluver et al's Rennie 1, se ne ne 20-3n-1e, sand 2605-35 ft, sand 2700-35 ft, Base Penn and top of Viola 3655 ft, Bromide dense 3710 ft, abnd 3963 ft.

Jefferson County—Failure: Seitz, Comegys' Seay 1, sw nw ne 32-6s-5w, wtr sand 1415-26 ft, 1433-41 ft, 1534-38 ft, 1566-97 ft, abnd 2003 ft.

Okfuskee County—Failure: Kerlyn and Continental Oil Co.'s Kershaw 1, se se ne 15-12n-7e, Mayes 4278 ft, Wood 4413 ft, Viola 4605 ft, Wx 4665 ft, 2nd Wx 4689 ft, pb 3943 ft, abnd 4725 ft.

Oklahoma County—Failue: Kerlyn's Jenkins 1, ne ne sw 28-13n-3w, Paw 3385 ft, Avant 4610 ft, Dewey 4740 ft, Perry gas sand 4770 ft, U. Lay 5280 ft, O.C. Ceb 5490 ft, Ceb 5700 ft, Osw 6180 ft, Base Penn and Hunton 6475 ft, Dense 6770 ft, Dolo 6820 ft, abnd 6907 ft.

Osage County—Failures: Cities Service's Osage 487, se ne nw 15-23n-10e, Osw 1595 ft, Miss 2091 ft, hfw, abnd 2141 ft.

Cities Service's Osage 488, c w½ sw sw 7-26n-11e, Osw 1473 ft, Miss 1921 ft, hfw, abnd 1955 ft.

OHIO

Athens County: Ohio Fuel's Warner 1, 386,000 gas, 1732 ft.
Ohio Fuel's Montte 1, 872,000 gas, 1075 ft.

Guernsey County: Ohio Fuel's Peiter 1, 73,336 gas, 3223 ft.

Knox County: H. E. Perkins' Heaton 2, 10 bbls, 2850 ft.

Licking County: National Drlg. Co.'s Fulton 3, 50,000 gas, 2248 ft.
Ohio Fuel's Wolfe 1, abnd 2643 ft.

Medina County: Wiser Oil Co.'s Eastwood 2, 525,000 gas, 3482 ft.

Meigs County: H. B. Walker's Adkins 1, 450,000 gas, 1615 ft.
Downie et al's Barnes 1, 116,000 gas, 692 ft.

Morgan County: Bern Oil & Gas Co.'s Huffman 8, 40,000 gas, 4809 ft.
Pure's Eppley 4, abnd 4220 ft.

Perry County: Preston's Rhoades 1, 40 bbls, 3277 ft.
Preston's Cookron 8, 190 bbls, 3318 ft.
Swingle et al's King 4, 100,000 gas, 923 ft.
Palm Oil Co.'s Herman Long 3, 10 bbls, 2771 ft.

Summit County: Wiser Oil Co.'s Wells 1, 115,000 gas, 3460 ft.

Tuscarawas County: James Upham's McCollam 1, abnd 5254 ft.

Wyandot County: Ohio's Heck 1, abnd 2801 ft.

PENNSYLVANIA

Armstrong County: Local Co.'s Eiseman 2, 178,000 gas, 1511 ft.
John Wray et al's Fiscus 1, 65,000 gas, 3434 ft.
R. C. Galbraith's Walls 1, 164,000 gas, 2722 ft.

Fayette County: Peoples Natural Gas Co.'s Seese 2, abnd 2752 ft.

Indiana County: Apollo Gas Co.'s Anderson 1, 33,000 gas, 2048 ft.

NORTH TEXAS

Archer County—Scotland: Shell's Coleman 7-C, 330 ft snl and 990 ft ewl lot 1, ATNCL 74, Bend 5140 ft, pump 49 bbls oil, 18 bbls water, acid 6000 gals 5146-5248 ft.

Archer County: Paul Atchley et al's Benson 1-E, TE&L 1398, abnd 994 ft.

Baylor County—East Rendham: Jordan Pet. Co.'s Fayette-Staton 1, 3166 ft snl and 7946 ft ewl of Fayette CSL sur, pump 51 bbls oil, 50 bbls water, acid 2000 gals, Palo Pinto 3019-24 ft.

Clay County: F. H. Gohlke et al's Panhandle 1, 1600 ft wel and 975 ft snl sec 47, Parker CSL, abnd 1772 ft.

Wichita County: C. Y. Gorman et al's Doyle 6, Geo. Wheelwright sur A-320, abnd 1233 ft.
Martin Properties' Jackson 1, 910 ft wel and 675 ft snl blk 16, leag 4, Denton CSL, abnd 1191 ft.

Young County—Allar: Panhandle & Fagadau's Allar-Hunt 8, 3798 ft snl and 1720 ft wel of s-1185-ac TE&L 3409, flow 268 bbls ¼-in, natural, sand 2726-42 ft.

NORTH TEXAS EXTENSION

Jack County: Rathke Oil Co.'s Jagoda 1, 660 ft e and 660 ft n of sec SA&MG sur, but in J. R. Erwin sur A-1608, abnd 4802 ft, ½-mi nw wildcat gasser.

NORTH TEXAS WELL DEEPENED

Young County: E. W. Robitaille et al's Vaughan 6-A, 1342 ft ewl and 1329 ft nsl BBB&C 1, otd 4068 ft, pump 20 bbls, shot 70 qts 4220-50 ft, td 4300 ft, pb to 4250 ft.

NORTH TEXAS WILDCATS

Clay County—Failure: Perry Browning et al's A. Browning 1, 860 ft out sec blk 52, Byers subdiv, abnd 1801 ft.

Clay County—Oil Discovery: Roy Lee, Tr.'s Maddox-Shell 1, 1475 ft snl and 2565 ft ewl Thos. M. Hughes sur A-179, Bend 5471 ft, Ellenburger 5583 ft, pump 17 bbls, acid 15,000 gals, perf 5476-5506 ft, td 5672 ft.

WEST CENTRAL TEXAS

Jones County—Wimberly: Ungren-Frazier et al's Moore 1, 330 ft fr se and sw lines 80-ac tr, G. Martinez sur, elev 1728 ft, abnd 2257 ft.

Stephens County—Loving: Wittmer-Knight & Ewing's Loving 5, c sw se sec 66, Orphan Asylum Lands, flow 100 bbls, 14/64-in, acid 3000 gals 3481-3507 ft.

Taylor County—Merkel: Keener O&G Co.'s Gilmore 1, 330 ft s and 2350 ft e of swc subdiv 4, Grimes CSL, but in T&P 28, abnd 2675 ft.

WEST CENTRAL TEXAS EXTENSION

Taylor County—½-mile se Merkel Pool: J. F. West et al's Henslee 1, 330 ft s and 780 ft e of swc subdiv 6, Grimes CSL, but in T&P 27, blk 17, pump 17 bbls, plus 12 bbls water, acid 1000 gals 2470-88 ft, td 2655 ft, pb to 2494 ft.

WEST CENTRAL TEXAS WILDCAT

Callahan County—Failure: E. M. Thomason et al's Barlow 1, 330 ft snl and 450 ft wel Comal CSL sec 75, abnd 451 ft.

Shackelford County—Failure: R. H. Roark et al's Todd 1, sw sw ne Blind Asylum Lands sec 11, abnd 664 ft.

TEXAS PANHANDLE

Gray County: Phillips' Clay-Franwill 1, c nw se H&GN 185, blk B-2, elev 3270 ft, abnd 2967 ft.

Hutchinson County: Skelly's Carver 2, 330 ft out nec lot 4, blk 4, Wm. Neil sur, elev 3341 ft, abnd 3278-3300 ft.

WEST TEXAS

Andrews County—Embar-Ellenburger: Phillips' University-Andrews 20, c ne ne sec 36, blk 11, elev 3252 ft, Ellenburger 7770 ft, flow 992 bbls, ¼-in, acid 500 gals perf 7950-58 ft, td 7966 ft.

Andrews County — Mascho: Whitaker Oil Co.'s University-Tidal 1-A, c nw se sec 23, blk 10, pump 131 bbls, shot 390 qts 4468-4545 ft, td 4550 ft.

Cochran County — Slaughter: Bay Pet. Corp.'s Mallet-Humble 4, 580 ft out nec lab 20, leag 53, Security CSL, flow 226 bbls, 1¼-in, acid 2000 gals 5005-26 ft.
Bay Pet. Corp.'s Mallet-Humble 8, 580 ft out nec lab 20, leag 53, Scurry CSL, flow 295 bbls, 2-in, acid 2000 gals 5016-26 ft.
J. A. Humphreys et al's Dean 1, 629 ft snl and 709 ft wel of 525-ac lse, Lipscomb CSL, leag 91, flow 729 bbls cas, acid 12,000 gals 5012-52 ft, td 5062 ft.
T. F. Morrow et al's Mallet 14, 580 ft nsl and 440 ft wel lab 20, leag 48, Edwards CSL, flow 770 bbls cas, acid 12,000 gals 4888-4939 ft.

Crane County—Sand Hills: Magnolia's Lea 19, c ne nw PSL 16, blk 32, flow 227 bbls ½-in, acid 2000 gals 4391-4659 ft.

Crockett County—Soma-Noelke: A. J. Rife-Floyd Scott's Thompson 2-B, 665 ft snl and 330 ft wel TC 58, blk GG, flow 3600 bbls, 2-in, natural, Yates sand 1300-10 ft, td 1312 ft.

Ector County—Goldsmith: Carl B. King-Bay Pet. Corp.'s Cummins-Gen'l Crude 2, 880 ft nsl and 1760 ft wel T&P 26, blk 45, T-1-N, flow 448 bbls, 14/64-in, acid 6000 gals 4260-4305 ft.
Carl B. King-Bay Pet. Corp.'s Cummins 1-B, 2200 ft snl and 1760 ft wel T&P 32, blk 45, T-1-N, flow 60 bbls 2-in, acid 6000 gals 4235-80 ft.

Pecos County—Apco: Magnolia's Fromme 1, c n½ of n¼ H&GN 106, blk 10, Ellenburger 4510 ft, Cambrian 4665 ft, flow 1580 bbls, ½-in, natural, perf 4520-75 ft, td 4727 ft.
Thompson & Carr, Inc.'s Gregg-Texaco 3,

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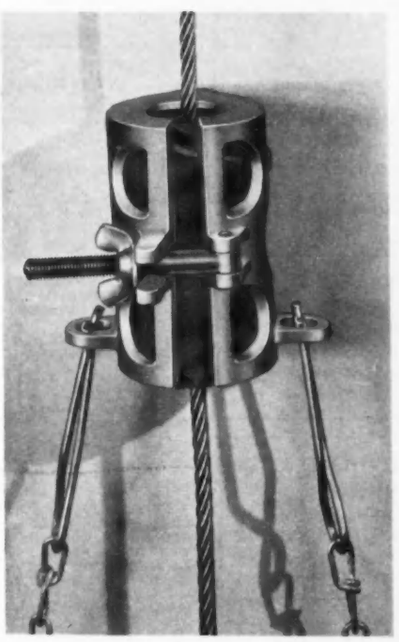

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c s½ of n½ H&GN 101, blk 10, Ellenburger 4545 ft, flow 813 bbls ⅝-in, acid 2000 gals, 4549-4685 ft.

Pecos County — Conry-Davis: Texas Co's Eaton 2, 230 ft from ne and 990 ft from se lines H&TC 17, blk 2, pump 32 bbls, plus 77 percent water, acid 500 gals; shot 45-qts 2310-32 ft, td 2350 ft, pb to 2335 ft.

Ward County: Jas. H. Snowden-L. H. Freedman et al's Wristen-Gulf 9-A, 2322 ft from ne and 1011 ft from se lines H&TC 18, blk 5, flow 208 bbls ¼-in, natural, 2424-94 ft.

Texas Co.'s University 6-C', 910 ft nsl and 1985 ft wel sec 5, blk 16, flow 434 bbls 2-in, 6 percent bs&w, shot 490 qts 2475-2675 ft.

Winkler County—Keystone: Skelly's Campbell 1, 554 ft out nwc nw PSL 29, blk B-3, flow 175 bbls eas, shot 230 qts 3160-3341 ft.

Winkler County—Weiner: Ralph Lowe et al's Brown-Altman-Humble 12, sw nw ne PSL 24, blk B-5, flow 240 bbls 1-in, shot 290 qts 3107-93 ft.

Yoakum County—Wasson: Belfort Oil Co.'s Herd-Humble 5, c nw nw sec 795, pump 140 bbls, acid 3000 gals; shot 270 qts 5060-5145 ft.

Devonian Oil Co.'s Bennett 1, c sw ne sec 631, flow 414 bbls ⅝-in, acid 11,000 gals 5100-5248 ft.

WEST TEXAS OLD WELL DEEPENED

Runnels County—McMillan: Victory Oil Co.'s Brevard 3-B, 150 ft snl and 320 ft ewl blk 21, N. Travis sur, otd 2510 ft, flow 15 bbls 2-in, acid 4000 gals 3522-41 ft.

TEXAS GULF COAST

Brazoria County—Danbury: Rowan Drilling Co.'s Jamison 19, 330 ft sw'ly at ra fr ne'ly line of Henry Austin sur, 1296-ac tr, 5½-in 3629 ft, sand 3547 ft, perf 3550-66 ft, flow 76 bbls, ¼-in, td 5875 ft.

Harris County — North Houston: Kirby's Daniel 2, 140-ac tr, WCRR 24, blk 4, abnd 1600 ft.

San Jacinto County—Mercy: Shell's Foster 5, 2375 ft n, 580 ft e se cor Richardson sur in William Dobie sur, sand 8285 ft, 5½-in 8273 ft, flow 146 bbls, ¼-in, td 8297 ft.

Jefferson County—Stowell: Glenn H. McCarthy and Brown & Wheeler's Hankamer 1, 660 ft fr s&wl of blk 11, Theo. F. Koch subdvn, B. A. Vaccou Lge, A-53, abnd 9373 ft.

TEXAS GULF COAST WILDCATS

Brazos County—Failure: Vee Tipt Oil Corp.'s Goodwin 1, 6 mi sw College Station, 62-ac tr, Stephen Jones sur 27, abnd 4570 ft.

Wharton County — Failure: Continental's Swanson 1, 98-ac tr, WCRR 45, abnd 5538 ft.

LOWER TEXAS COAST

Jackson County—West Mauritz: John B. coffee's Westhoff & McCrory 1, 467 fr s&el's of s 40-ac of e 160-ac of w½ of Morris & Cummings sur 22, A-312, 5½-in 5615 ft, perf 5478-82 ft, 130 bbls, 7/64-in, td 5850 ft.

Jim Wells County—Quinto Creek: Republic Natural Gas Co.'s Wichring 1, 1393 ft fr nwl & 467 ft fr swl of 322-ac tr on 160-ac lse, Casa Blanca gr, abnd 5117 ft.

Jim Wells County—Seeligson: Shell's Seeligson 18, 759 ft fr sl & 539 ft fr el of Willis Millican sur 335, A-291, sand 5996 ft, 5½-in 6050 ft, perf 5996-6035 ft, 135 bbls, 9/64-in, td 6055 ft.

Kleberg County—Seeligson: Humble's King Ranch-Cabeza 8, 162 ft fr nl of SK&K 177, sand 6068 ft, 5½-in 6068 ft, flow 148 bbls, ¼-in, td 6075 ft.

LOWER TEXAS COAST WELL DEEPENED

San Patrico County—Plymouth: Plymouth Oil Co.'s Welder 32-C, 1393 ft fr sl & 3491 ft fr wl of sec 49, old td 5488 ft, 5½-in 6887 ft, perf 5886-87 ft, flow 50 bbls, 7/64-in, td 5887 ft.

LOWER TEXAS COAST WILDCATS

Bee County—Failure: Blanco Oil Co. and Al Buchanan's Cook 1, 660 ft fr ne&nwl's of 142-ac tr, William C. Gill sur, A-166, abnd 6253 ft.

Victoria County—Failure: LaGloria Corp.'s Hopkins 1, 660 ft fr ne&sel's 216-ac tr, Allen Talbott sur, abnd 6265 ft.

LOWER TEXAS COAST NEW PAYS

Jackson County—New Gas Pay: Barnsdall's Graves 3, North LaWard field, 500 ft fr wl & 720 ft fr sl of lot 13, Pickering Reh subdvn, Patrick Scott sur, A-69, Marginulina 5205 ft, perf 5091-97 ft, flow 30,000,000 gas, open flow, td 5707 ft.

Nueces County — New Oil Pay: Chicago Corp.'s Walton 1, Agua Dulce field, 510 ft fr n&wl's 100-ac lse, Palo Alto gr, new pay 5930 ft, 5½-in 6430 ft, perf 5950-66 ft, flow 110 bbls, ⅛-in, td 7075 ft.

SOUTHWEST TEXAS

Jim Hogg County—Colorado: Humble's King Ranch 72-B, 15,166 ft fr wl & 2055 ft fr sl of Las Moretas gr, 8376-ac lse, abnd 3455 ft.

LaSalle County—Washburn: Quintana Petroleum's South Texas Syndicate 18, 467 ft fr sl & 787 ft fr wl of T. W. House sur 67, A-233, abnd 5996 ft.

Starr County—Ulrich: Gulfshore Oil Co.'s Garcia 1, 330 ft fr s&el's lot 13, share 7-B, J. Benavides porcion 91, sand 3968 ft, 5½-in 3997 ft, perf 3972-78 ft, flow 58 bbls, 3/32-in, td 3997 ft.

SOUTH CENTRAL TEXAS WILDCAT

Guadalupe County—Failure: H. H. Weinert and A. B. Buchanan's Verdeja 1, 1204 ft fr swl & 880 ft fr nwl of 165-ac tr, Samuel Highsmith sur, abnd 2475 ft.

WEST VIRGINA

Braxton County: Pitts. & W. Va. Gas Co.'s Cabot 7902, 378,000 gas, 2061 ft.

W. Va. Gas Corp.'s T. L. Skinner et al 1, 44,730 gas, 2712 ft.

Clay County: Pittsburgh & W. Va. Gas Co.'s Elk River Coal & Lumber Co. 7890, 164,000 gas, 2261 ft.

Gilmer County: Phillip Lemon's Keith 2, 34,990 gas, 1835 ft.

So. Penn Nat. Gas Co.'s Lewis 5, abnd 1786 ft.

Kanawha County: Godfrey L. Cabot's Beane 1066, 67,000 gas, 4835 ft.

Ritchie County: T. S. Deem's Stephens 27, 1,500,000 gas, 1963 ft.

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United States Wildcat Starts

ARKANSAS

Bradley County: Placid's Southern Lumber Co. 2, dr.

Calhoun County: Placid's Freeman Smith 3, ne se 14-16s-13w, dr.

Placid's Freeman Smith 4, ne nw 2-15s-14w, dr.

Placid's Southern-International 1, nw se 30-14s-14w, rig.

Columbia County: Hunt Oil Co.'s Pinewood's A-1, se nw 9-20s-22w, woc.

Lafayette County: W. G. Ray Drilling Co. et al's Warnock - Lecroy 1, sw sw 3-20s-24w, dr.

Miller County: Magnolia's Olivet A-9, ne ne 4-16s-26w, dr.

Little River County: King's Stubblefield et al 1, nw ne ne 10-12s-30w, mim.

Johnson County: Arkansas Louisiana Gas Co.'s Hendrix 1, se 21-10n-21w, dr.

Franklin County: Arkansas Western Gas Co.'s Woolsey 1, sw sw 13-10n-27w, dr.

CALIFORNIA

Fresno County: R. S. Lytle, operator, with one location, and Standard Oil Co. with three, announced four new wildcats following last week's confirmation of the Standard's new field discovery in 29-20-16, Guijarral Hills area. They are as follows:

Lytle's 88-20F, 20-20-16, in the section offsetting the discovery to the north.

Standard's 62-29F and 64-29F, both in the section where discovery well is located; and

Standard's 28-21F, 21-20-16, in the section diagonally adjoining the discovery section to the northeast.

Orange County: Signal Oil & Gas Co.'s Irvine 1, 6-7-9, in an area near the Coast Highway, at the east limits of Corona del Mar.

San Joaquin County: Bankline Oil Co.'s gas test, 1-4-6, in the Galt area, planned for about 6000 ft as a joint operation of Bankline, Seaboard Oil Co. and Honolulu Oil Corp.

ILLINOIS

Jefferson County: Byars & Ellison's Jeff 2, ne se ne 31-3s-2e, lcn.

White County: Ralph Holbert's Proctor 1, ne ne ne 17-3s-14w, lcn.

KANSAS

Barton County: Appleman's McFarland 1, c s½ ne se 1-16s-11w, matl.

Cowley County: Nadel & Gussman's Mohler 1, c s½ se se 27-31s-4e, mi mach.

Decatur County: Helmerich & Payne's Savage 1, ne ne ne 3-1s-27w, rur.

Ellis County: Mid-Continent et al's Fischer 1, ne ne ne 8-11s-20w, rur.

Saline County: Westgate-Grennland's Sudendorf 1, nw nw se 30-14s-2w, mir.

MICHIGAN

Gladwin County: Sun Oil Co.'s Marble 1, e½ sw sw 17-17n-2w, lcn.

Ottawa County: Fisher-McCall, Inc.'s Brandt 1, c sw se 30-5n-13w, rig.

OKLAHOMA

Love County: Mudge Oil Co.'s Tanner 1, ne ne se 6-6s-2e, lcn.

Stephens County: T. C. Vaughn's Hervey 1, se ne se 31-2s-5w, rur.

Pottawatomie County: Deep Rock-Shelby & Lewis' Baker 1, nw ne se 24-10n-2e, c&p.

Stephens County: F. G. Clapp et al's McCasland 1, sw sw ne 9-1n-4w, rur.

Helmerich & Payne's Gilghorn 1, ne ne ne 25-2n-6w, c&p.

NORTH TEXAS

Clay County: Webb and Taylor's C. H. Bentley 1, 450 ft out nec blk 51, Specht & McCutcheon subdiv, B. Gates sur A-158, lcn.

J. W. Hastings et al's E. D. Owens 1, 330 ft nsl and 960 ft wel blk 50, Specht & McCutcheon subdiv, lcn.

Throckmorton County: White-Duncan and Humble's White-Duncan 1, 330 ft snl and 990 ft wel blk 51, Comanche Indian Reserve, lcn.

Wilbarger County: British - American Oil Prod. Co.'s Cora E. Wilkinson 1, 990 ft nsl and 330 ft ewl sec 103, Waggoner Colony subdiv, lcn 6000-ft test.

LOWER TEXAS COAST

DeWitt County: Humble's Werland 1, Terryville area, 272-ac tr, Henry Chamberlain sur, 2 mi w Brushy Creek field, lcn 9500-ft test.

Jim Wells County: Humble's Evetts 1, 160-ac tr of n½ of 575-ac lse, Roberts & White subdvn of Marcelina Lopez gr, lcn 6000-ft test.

Victoria County: A. C. Vernor's Stubbs 1, 2 mi se Coletto Creek field, 502-ac tr, Rafael Manchola gr, lcn 5200-ft Vicksburg test.

Jackson County: John B. Coffee's Egg 1, 1½ mi nw Maubro field, 258-ac tr, H. H. Hines sur, A-117, lcn 6500-ft test.

SOUTHWEST TEXAS

Live Oak County: Stanolind's Matheson 1, 300-ac lse, J. M. Reed sur, 8 mi ne Dinero, drilling.

WEST TEXAS

Hockley County: Geo. P. Livermore, Inc.'s Thomas-Humble 1, 660 ft out nwc lab 29, leag 10, Ellwood subdiv, Donley CSL, sp on 5500-ft test.

Lubbock County: John R. Sharp et al's Martin-Stanolind, c ne se HE&WT 18, blk D-6, lcn 6000-ft test.

Mitchell County: W. S. Guthrie et al's Soloman 1, c sw se H&TC 91, blk 97, lcn 3500-ft test.

Ward County: Belfort Oil Co.'s University-Texaco 1-W, 660 ft snl and 1992 ft wel sec 14, blk 16, lcn.

WEST CENTRAL TEXAS

Jones County: Hunter & Hunter's W. A. Minter 1, 660 ft out sec lot 7, SP 41, blk 2, lcn 3400-ft test.

Men in the Industry's News

DR. GEORGE R. GRAY has resigned as senior production research engineer with Humble Oil & Refining Company, Houston. He is to take charge of research and control work in the Houston laboratory of Baroid Sales Division, National Lead Company. Gray is chairman of the Southeastern Texas Section of the American Chemical Society.

BENJAMIN F. HARRIS has resigned his positions as president of the Oilwell Supply Company and National Tube Company.

MAJOR JOHN D. TODD, former Houston geologist and oil producer, recently was promoted from a captain and is stationed at Dodd City, Kansas.

HERMAN JONES, director of Gas Utilities Division of the Texas Railroad Commission, has resigned to accept a post with Powell, Wirtz, Rauhut & Gideon, Austin law firm. His successor has not been named.

WILLIAM FLEMING, president of Fleming Oil Company, active producing unit in East and West Texas, has been elected president of the Fort Worth Area Council, Boy Scouts of America. He succeeds Capt. John W. Herbert, president of Herbert Oil Company, who was killed last November while on duty with the Air Corps in the South Pacific.

WILLIAM F. ARMSTRONG, 56, associate of W. Mark Day in oil producing activities since 1930, died February 18 of a heart attack at his Gladewater, Texas, residence.

E. G. DAHLGREN, technical secretary of the Interstate Oil Compact Commission, has been conferring with oil and gas regulatory officials of Colorado and Wyoming. He will make a report to the executive committee of the compact at Wichita.

JACK H. ABERNATHY, engineer with the Oklahoma City Pool Wilcox Engineering Association, addressed the Central Oklahoma chapter of the American Petroleum Institute at Oklahoma City, dwelling on the Wilcox sand zone in the Oklahoma City field.

J. MARSTON LINEHAN, general superintendent of Mid-Continent Pipe Line Company, subsidiary of Mid-Continent Petroleum Corporation, at Tulsa has been given the new title of general manager, with George O. Moody, vice president in charge of production of Mid-Continent Petroleum Corporation as president of the pipe line company.

RICHARD T. LYONS, assistant vice president of Tide Water Associated Oil Company, Houston, has been spending considerable time in the company's Tulsa office.

DR. ROBERT J. WATSON of the geological laboratory of The Carter Oil Company, addressed the Tulsa Geological Society on "A Geologist's Impression of Egypt."

ARTHUR PROUDFIT, formerly manager of Western Venezuela operations of Standard Oil Company of Venezuela, and prior to that manager of the Eastern Venezuela holdings of the company, has succeeded Henry Linam as president of the company with headquarters in Caracas. Linam resigned a few months ago and is living in Louisiana. James Clark has been named as Proudfit's chief assistant. H. A. Grimes has been made manager in Eastern Venezuela and A. L. Owens has been put in charge in Western Venezuela.

J. L. MATHIEU, vice president of Schlumberger Well Surveying Corporation, Houston, addressed the Fort Worth Geological Society, February 15, regarding the company's new instrument which measures the orientation and value of formation dip in situ.

CAPTAIN NELSON W. PICKERING, USNR, reported for active duty in the United States Navy on February 1, and has resigned as president of Farrel-Birmingham Company, of Ansonia, Connecticut, and Buffalo, New York. Captain Pickering has been assigned to duty as commander of a Navy section base and is commander of local defense forces in that area.

MASON HULETT, of Farrel-Birmingham Company, Inc., of Ansonia, Connecticut, and Buffalo, New York, died suddenly, Sunday, February 7, in Washington. Hulett had been connected with the New York office of the company for the past nine years, as sales engineer and consultant on gears. At the time of his death he was on leave, serving as Chief of the Industrial Gear and Speed Reducer Unit, Material Handling Equipment Branch, War Production Board, in Washington.

FLOYD A. FERGUSON has been appointed treasury manager of Westinghouse Electric and Manufacturing Company's electric appliance division, with headquarters at Mansfield, Ohio. Howard C. Little who formerly held the position taken over by Ferguson, has been transferred to the headquarters treasury staff to be responsible for "financial security in connection with advances and progress payments to suppliers, and assignments to third parties."

B. H. QUACKENBUSH has been appointed as assistant sales manager of Foote Bros. Gear & Machine Corporation, Chicago. He is a graduate of the Mechanical Engineering College of the University of Illinois and after studying law, was admitted to the bar in 1936. In 1933, after a number of years experience in engi-

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A symposium conducted by the Research Committee of The American Association of Petroleum Geologists, A. I. Levorsen, chairman. Papers read at the Twenty-sixth Annual Meeting of the Association, at Houston, Texas, April 1, 1941, and reprinted from the Association Bulletin, August, 1941.

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Edited by A. I. LEVORSEN

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The purpose of this symposium is to get an over-all picture of the undiscovered oil resources of North America, north of the Rio Grande. Ten geological organizations have participated, to the end that this survey has behind it the authority of many geologists representing state and national geological surveys, large and small oil companies, and consulting and independent geologists. A map and a section of geology, stratigraphy, and structure illustrate each province description.

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neering work, he joined Foote Bros., and in 1936 he was placed in charge of the contract division, handling large machinery contracts. In his new capacity he will continue to handle contract sales and, in addition, will supervise the activities of the priority department and the activities of the sales department under OPA.

FRED C. SMITH has been appointed chief metallurgist for Tube Turns, Louisville, Kentucky, effective January 18. Prior to his affiliation with Tube Turns, Smith was employed by Carnegie-Illinois Steel Company.

WILFRED C. SHATTUCK is now sales manager for Wickwire Spencer Steel Company. Since graduating from Brown University, in 1924, Shattuck has been with the Wickwire organization, with the exception of two years. He will be located in the New York general offices.

JOHN B. KLUMPP has recently been elected to the board of directors of American Meter Company. Klumpp is a graduate of Stevens Institute of Technology and has a wide background of experience in many fields of gas engineering. Recently he has been engaged in engineering work in connection with the supplying of gas to the Army bases in Florida, and by the United States Navy in making a survey of numerous large oil-fired installations in converting them to the use of coal.

HOWARD D. ATHA, 67, president of Gordon Oil Company, and past president of the Oil and Gas Association of Michigan and the Ohio - Pennsylvania Crude Oil Association, died February 22.

He entered the oil business with Clayton Oil Company at Mannington, West Virginia, in 1903. With J. P. Gordon in 1918 he organized Gordon Oil Company, serving as vice president and general manager, and in 1936 became president of the company.

Before moving to Michigan in 1929, Atha served as a director of Pennsylvania Grade Crude Oil Association, which he helped to found, and participated in organization of Ohio-Pennsylvania Crude Oil Association. He also served as a member of the Eastern District API directors and was a member of the executive board of the IPAA. He also was president of Bay Pipe Line Company and vice president of Bay Refining Company.

JOHN ELI BARKER, 60, an employe of Golden Bear Oil Company, died early in February in Bakersfield. He worked on the Grimes lease in the Premier pool area for seven years.

Squeaks from the Bull Wheel

Advice to Maidens

"I am going on a picnic with a young sailor. What do you think I should take?"

"Care."

Distasteful

"I'm getting so I like that guy less and less."

"Why?"

"He's the kind of guy who, when he pours you a drink and you tell him to stop, stops."

Breaking It to Father

"Do you think your father would say anything if I told him we were going to be married?"

"I don't know, but I imagine he'd say something if you told him we weren't."

Catching

"What seems to be your trouble?"

"I believe I have caught insomnia. I can't sleep a wink until around three in the morning."

"Nonsense. Insomnia is not contagious."

"It is in my case, doctor. The baby next door has it."

Post Graduate

Daughter: "Yes, I've graduated, but now I must inform myself in psychology, philology, bibli—"

Practical Mother: "Stop! I have arranged for you a thorough course in roastology, bakeology, stitchology, darnology, patchology, and general domestic hustleology."

It Depends

Passenger: "Have I time to say goodbye to my wife?"

Conductor: "I don't know, sir. How long have you been married?"

Origin of Doubt

"My husband always agrees with anything I say."

"Yes. It's his way of intimating that he does not consider your views sufficiently important to be worthy of argument."

The Consequences

"How did you get that bad eye?"

"It's a birth mark."

"What do you mean, a birth mark?"

"I got in the wrong one on the Special last night."

Emily Would Know

A man and wife, hiking in the woods, suddenly realized they had lost their way.

"I wish Emily Post were here with us," said hubby. "I think we took the wrong fork."

The Snag

Two old settlers, confirmed bachelors, sat in the backwoods. The conversation drifted from politics to cooking.

"I got one o' them there cookery books once, but I never could do nothing with it," said one.

"You've hit it. Every one of them recipes began in the same way—'Take a clean dish.' And that settled me."

Notes for the Equipment Buyer and User

The National Supply Company Given Third Army-Navy Award

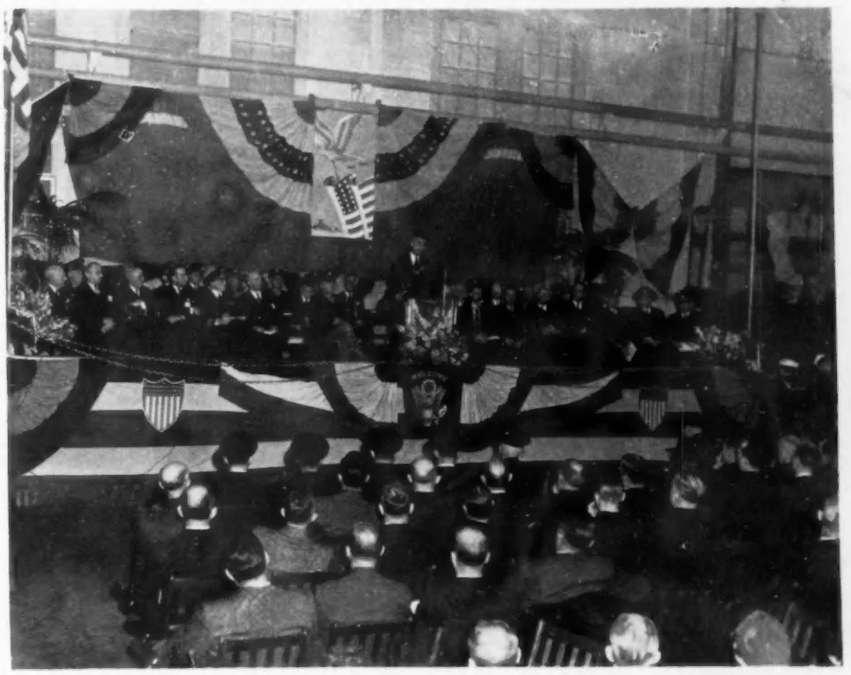
The National Supply Company was the recipient of its third War Production Award on February 10 with the presentation of the Army-Navy "E" to the employes of its Toledo, Ohio, plant. The two previous awards consisted of the Army-Navy "E" at the Ambridge, Pennsylvania, plant and the U. S. Maritime Commission Victory Fleet Flag and Maritime M Pennant to the Superior Engine Division at Springfield, Ohio.

Presentation of the Toledo Plant Award Flag was made to President A. E. Walker by Rear Admiral William C. Watts, U.S.N., retired. "We regard it as a token of partnership with those brave sailors and soldiers fighting in the far corners of the world to maintain the rights of free men," Walker said in his acceptance speech.

Col. Ernest O. Rudelius presented "E" pins to the four oldest employes of the plant whose tenure of service ranged from 44 to 51 years of continuous service. Pins were accepted in behalf of the employes by J. S. Biscay, president of The National Supply Unit, U.A.W.-C.I.O. "Our fighting sons will never falter if we do our part. Let us put on these pins in solemn compact with them," Biscay said.

Governor Saltonstall of Massachusetts, gave the principal address and paid tribute to the workers and management in declaring, "All of us are working together on the home front as well as on the battle front."

Following the ceremonies refreshments were served to over 2000 workers and guests.



Ceremonies at presentation of "E" Award to The National Supply Company

Edward Valve & Manufacturing Company to Get Maritime Award

The Maritime "M" pennant and labor merit insignia, of the United States Maritime Commission, have been awarded to The Edward Valve & Manufacturing Company, East Chicago, Indiana, Rear Admiral H. L. Vickery, chairman of the commission's board of awards has announced.

First purely Chicago area company to receive the award, the company has been building cast and forged steel valves for the Maritime Commission ships since the inception of the "C" type shipbuilding program in 1938.

Presentation ceremonies will be held in the plant on March 13.

Ben F. Kelly Company Organized at Tulsa

Ben F. Kelly Company has been organized at 212 Beacon Building, Tulsa, with Ben F. Kelly as manager. The Kelco safety spinning line cathead and other items for the petroleum industry are being offered through supply companies.

Previous to forming his own company, Kelly was associated with Shaffer Specialty Company since 1936 as vice president and sales manager. Prior to that, he was with Gypsy Oil Company at Glenn pool, with Continental Supply Company and with Titusville Iron Works Company.

General Engineering Makes Change in Its Name

The name of General Engineering & Model Works has been changed to Allen Gauge & Tool Company. This will not involve any change in management or in the business in which General Engineering & Model Works has been engaged. The principal reason for the change is to identify the company more closely with its particular kind of work and to simplify the name.

Graphite

A 4-page illustrated bulletin, No. 422-AO, on the use of colloidal graphite as a parting compound has been released by Acheson Colloids Corporation, Port Huron, Michigan. This bulletin discusses colloidal graphite for screw threads, lamp bulbs, its application to aviation and deep-sea diving equipment, and also its use in the glass industry, in the foundry, and in the rubber industry.

Compressors

Ro-Flo compressors and pumps of the sliding vane type are illustrated and described in a new bulletin B-6211 released by Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin. These machines are smaller and of less weight than reciprocating machines or compressors of similar capacity.

The bulletin states that motors may be directly connected to Ro-Flo units which operate at high speeds, 1200 or 1800 rpm, thus effecting an additional wartime saving. Light in weight, they require only light and inexpensive foundations.

Metal Cutting

McKenna Metals Company, 224 Lloyd Avenue, Latrobe, Pennsylvania, has published a metal cutting manual. It is a vest-pocket edition ruggedly bound to withstand continuous use in the shops. Its 52 pages contain complete information on the care, handling, and most efficient methods of using Kennametal tools. More than 100 drawings illustrate tool applications, operations, tool styles, and instructions for grinding, tool design, and brazing blanks to used shanks to make tools in the operator's own shop.

The manual presents tables on grinding wheel recommendations, suggested speeds of operation in relation to the hardness of the workpiece, proper chip breaker dimensions, and correct grade selection.

Belt Drives

Cling-Surface Company, Buffalo, New York, has issued a "Handbook of Modern Power Transmission for Industry," a presentation of the most recent engineering procedure in designing group drives and maintaining these drives for efficient power transmission.

Especially timely now, this handbook points out the simplicity of converting from individual drives to group drives, with a consequent reduction in the equipment needed for effective operation.

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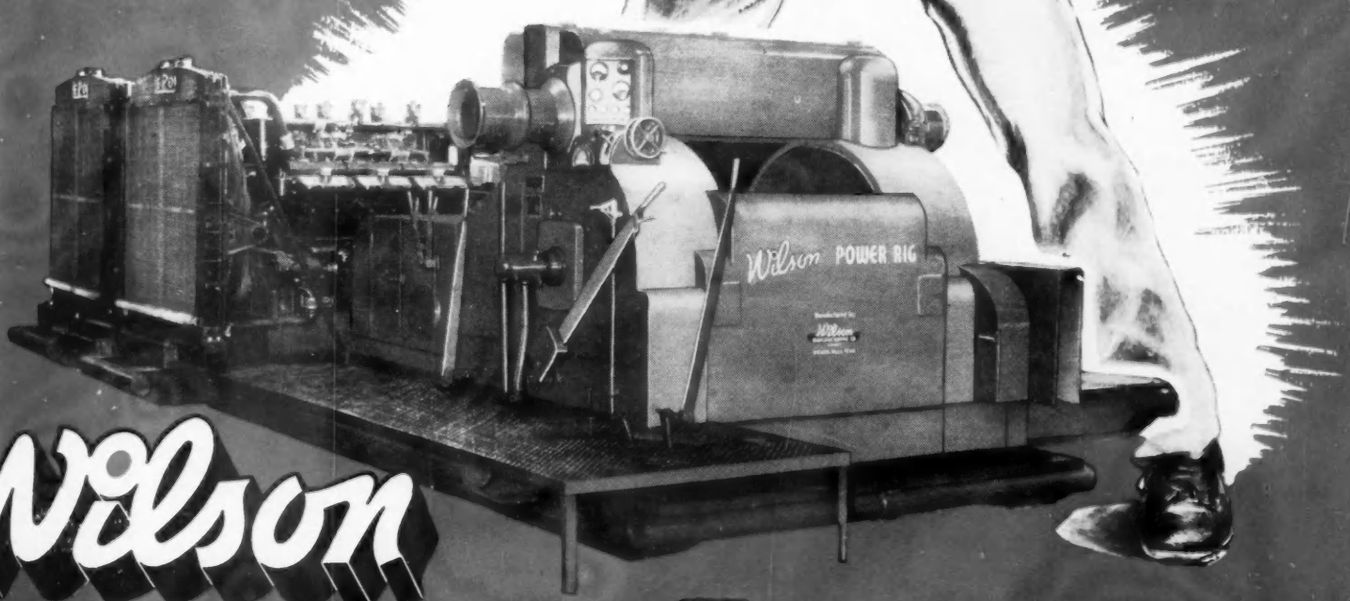

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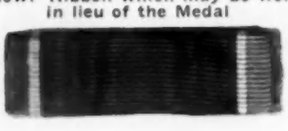

... When surprised by a heavy air attack ... proceeded by automobile, under fire, to his station, where on his own initiative he took off to attack the invading forces, shooting down a dive bomber; with one gun jammed, he pursued and shot down another plane running out to sea. No more enemy planes in sight, he proceeded to a nearby field for fuel and ammunition. Before his guns had been repaired, a second wave approached.

He immediately took off, going to the assistance of a brother officer who was being attacked from the rear; this enemy plane burst into flames and crashed. This attacking wave having disappeared, he found one enemy plane proceeding seaward, which he pursued and shot down.

For such initiative, presence of mind, coolness under fire against overwhelming odds he was awarded the Distinguished Service Cross.

Second ranking decoration for the U. S. Army, the Distinguished Service Cross was authorized by Congress in 1918, to be awarded to persons "who, while serving in any capacity with the Army of the United States, distinguish themselves by extraordinary heroism in connection with military operations against an armed enemy."

—HUGHES TOOL COMPANY, Houston, Texas